A R M E D F O R C E S S E C U R I T Y A G E N C Y

DF-241, Part I

45/51/TOPSEC/AFSA-14

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THE "FORSCHUNGSAMT"

1. Attached is an Armed Forces Security Agency translation of five of the replies to certain questions submitted to former members of the "Forschungsamt", the cryptologic organization established by Hermann Göring, largely to strengthen his own position. Originally negotations were conducted with Messrs. Kuebler and Wenzel but in the end they declined to do the job and suggested Dr. Bruno Kröger, formerly in the Cryptanalytic Division, assisted by Dr. Kurtzbach, formerly in the Foreign Affairs Branch of Division V, and Oberregierungsrat Huppertsberg, former advisor on wireless and cable communications. So far as known the last named has not yet contributed.

2. The original list of 24 questions submitted is reproduced in lieu of a table of contents. It will not be repeated in subsequent parts. In each case the member of the team who was supposed to answer is indicated after the question.* The team declined to answer question 23 which requested an estimate of their former colleagues.

3. Dr. Kröger has chosen to deal with questions regarding cryptologic matters in a comprehensive, separate paper which will be issued - in parts - under the short title DF-240 (see DF 240-A for tentative table of contents).

4. Prior to the receipt of this material the only paper available by a former member of the Forschungsamt was a short one by Schubert (DF-215). Other information had to be gleaned from various interrogation reports and statements by men who were not members of the organization (e.g. DF 116-U and 116-AL). The papers now being prepared will give a far better picture of this much debated organization - at least of its cryptologic work.

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Deputy Associate Director for Policy and Records
on 7.8.2011 and by RLF

Questions submitted

(The member of the team who was supposed to answer is indicated at the right of each question: Kr = Kröger, Ku = Kurtzbach, H = Huppertsberg).

		Answered by
1.	Organization of the Forschungsamt, with a description of the duties of the various divisions and subdivisions.	Ku.
2.	Organization of the Cryptanalytic Division, with duties of the various subdivisions.	Kr.
3.	Names of persons known to you, their activity inside and outside the FA. Present address?	Kr. Ku. H.
4.	In which division and section where you active? When?	Kr. Ku. H.
5.	What did you work on? Systems? Results?	Kr.
* 6.	Describe systems known to you; explain methods; what tricks do you know which aid decryption? Weak points and how to find them?	Kr.
* 7.	Message heading, beginning and ending.	Ku. H.
8.	Who used the various systems? When?	Kr.
** 9.	Call signs, frequencies; how often changed? When?	Ku. H.
* 10.	What aids contributed to decryption?	Kr.
11.	What printed forms were used? How?	Kr.
* 12.	What devices were available? Purpose? Description.	Kr.
13.	To what extent were Hollerith machines used? How?	Kr.
* 14.	Typical course of solution: PT, Code Table, Code; superencipherments.	Kr. H
15.	What were the VN's? Preparation? Distribution? How many copies? What did they contain besides decrypted text? Might any still be found?	?
16.	A co-worker said that the Russian diplomatic systems (5-digit and 5-letter) had been solved in another country which he did not name, although the FA gave up work on these because no progress could be made. Did you ever hear of this? What country solved the system? Do you know any details?	Kr.
17.	Did the FA work on traffic of Russian bands and agents? To what extent and with what result?	Kr.
**18.	What were the W-Stellen? Equipment? Assignments? Was there regular collaboration with them?	H.
19.	What card files were there? How arranged? What was the archive? To what extent were these two institutions satisfactory?	Kr.+ ?

			Answered by
**	20.	Special devices for intercepting radiograms? High speed transmitters? For unscrambling voice transmissions? Other purposes?	H
	21.	What do you know of any special Russian equipment?	Kr.
	22.	What is known regarding a possible central cryptanalytic unit in Russia? Capacity and strength?	Kr.
	23.	Were your co-workers zealous or lax? Why? Relations with the Armed Forces? With the Party? In your own organization?	- -
	24.	How were the relations of FA with other cryptologic units?	Kr. Ku.
	25.	What were the relations between FA and the Gestapo? SD? Abwehr?	Kr. Ku.
	26.	Did the FA have courses for new personnel? Character?	Kr. Ku.
	27.	How was personnel recruited? Security measures? Were there dismissals for security reasons?	Kr.
	28.	Did the FA take part in meetings of Army, Navy and Air on security matters?	Kr.
		Voluntary -- A Critical Evaluation	Ku.

* These questions are to be treated together in a separate paper: "Characteristics, Analysis and Security of Cryptographic Systems" to be issued as DF-240.

** Answers not yet received.

Question 1: Organization of the FA and description of the duties of the various divisions and sub-divisions.

Question 2: Organization of the cryptanalytic division with duties of the various sub-divisions (branches, sections).

Organization of the FA

Introductory remarks:

The fact that the FA was developed in 1933 out of nothing had the inevitable result that its organizational form developed slowly and gropingly at first and that it took years of successful and unsuccessful experimentation to give it its final form. This did not come until 1939. Shortly after that the war began and brought with it a tremendous increase in personnel; during the second half of the war the consequences of air raids became more and more serious and led to ever more extensive shifts of location. Both these factors affected the organization and from 1944 on the increasing loss of personnel to the field forces was felt.

Nevertheless it may be said that from start to finish the basic framework of the organization did not change. This concerns the division into:

Administration

Technology

Interception

Decryption

Evaluation and Archives

In what follows, the organization will be described in the main in the form existing at the outbreak of the war.

Director of the Agency (Amtsleiter)

The director of the agency determined, as is usual, his own field of activity. The first director, Kapitän z. S. SCHIMPFF, as a communications expert, took a definite interest in interception, cryptanalysis and particularly evaluation. The second director, Prince Christof von HESSEN, limited his activity to representing the agency with respect to higher outside authority and was concerned internally only with administrative and personnel matters.

Office I: (Hauptabteilung I)

The chief was the regular deputy of the director and was in charge of records covering all matters of organization. His office consisted of a personal deputy and two (female) secretaries. Directly subordinate to him was the

Division 1 (Abteilung 1): Security.

It dealt with all general matters of personnel, technology and administration or organization which related to the security and secrecy of the agency. At the same time it was a sort of expanded office of the chief of Office I and had other minor duties, e.g. courier service. In the final years, when under pressure from the RSHA (Main Security Agency) the checking of political reliability was stressed more strongly (see Question 27), the personal files of those considered for employment passed through Division 1. Until that time its activity in this direction was limited to handling very rare cases where there was suspicion of treason and to commanding the guards at the gates and on night patrol in the agency.

Division 1 was not very popular in the rest of the agency.

Office II:

Personnel and Administration.

The Chief handled personnel matters of the officials who made up only about 1% of the total personnel.

Division 2:

Personnel matters.

Dealt with all personnel questions of employees and workmen.

Division 3:

Administration.

This was broken down, as usual, into

finance

administration of real estate

administration of other property.

Office III. (Its organization will be given in a special report.)

Office IV: (This is the answer to Question 2.)

Cryptanalysis.

Office IV had as its main assignment the decryption of enciphered diplomatic messages of all foreign nations; it was also charged with preparing cryptographic systems for the communications of the various offices of the FA with one another. Finally it was responsible for liaison and written communication with other agencies insofar as the field of cryptanalysis was concerned.

The entire range of cryptanalytic work in this Office was divided among the four Divisions 6, 7, 8 and 9, while the Office reserved to itself essentially the coordination and supervision of the different sub-divisions and personnel policy.

The work was divided among the above mentioned Divisions as follows:

Division 6:

Cryptologic Research and Analysis;
Training of Replacements.

Division 7:

Work on the English and Spanish speaking countries, including the Near and Far East.

Division 8:

Work on the Romance languages (omitting Spanish and Portuguese).

Division 9:

Work on Slavic and Scandinavian Countries.

In more detail, the organization of these Divisions was as follows:

Division 6 with special responsibility for cryptologic research occupied itself primarily with the analysis of reenciphered systems and cipher machines insofar as difficult systems were involved which could not be dealt with in the other three geographic Divisions by the expert for the country concerned. Selection of the systems to be worked on was made in agreement with the Office and the Division concerned with the particular country.

Since all the enciphered traffic went from the main sorting (Division 5) to the several Divisions 7, 8, 9 according to the originator, to be sorted in the section for the country according to systems and then worked on, a card file was dept in Division 6 containing a special card for each crypto=graphic system. This card listed the following data:

Country and link (Originator and Addressee)

Designation of the system

Outward characteristics of the system

Type of indicator groups

Analysis of the system with detailed description

Volume of traffic

Data on when the system was first and last observed

State of solution.

For the sometimes very extensive statistics and statistical labor in connection with the analysis of difficult systems Division 6 had special Hollerith equipment so that in addition to the evaluators and experts relatively few assistants were required for making counts and the like.

Furthermore Division 6 originated and checked cryptographic systems for communication between the several offices of the agency. The cryptographic material required for these systems was produced and distributed regularly.

Finally the Division was responsible for the uniform training of replacements for the entire Office. For this purpose a training course lasting several months was given each year.

Division 6 was divided into the following Branches and Sections:

Branch A
(Gruppe A)

Section 1 : Analysis of cipher machines
(Referat 1)

Section 2 : Devising and checking own cryptographic systems.

Section 3 : Training of replacements and preparation of training literature.

Branch B

Section 1 : Analysis of reenciphered hand systems.

Section 2 : Hollerith equipment for statistical work on cipher material.

.Of course this was no hard and fast division; instead the employment of personnel in the various fields, in particular in Section 1 of Branches A and B, depended on the requirements for breaking the systems worked on. In special cases individual workers from other Divisions were employed in Division 6 on specific problems so long as needed.

The other three Divisions 7, 8, and 9 of Office IV had the assignment of sorting the incoming enciphered traffic, distributing it according to country and system, solving the systems insofar as they were basic systems or easily solved encipherments, translating the decrypted messages and issuing the same as promptly as possible.

These three Divisions were organized as follows:

Division 7:

Worked on English, Spanish and Portuguese speaking countries, also the Near and Far East.

Branch A: English speaking countries and Near and Far East.

Section 1: England, British Empire, U.S.A.

Section 2: Japan, China, Manchuria.

Section 3: Turkey, Iran, Irak, Saudi-Arabia, etc.

Branch B: Spanish and Portuguese speaking countries.

Section 1: Spain and Latin America (omitting Brazil).

Section 2: Portugal and Colonies, Brazil.

Division 8:

Worked on Central European Countries, in particular Romance languages.

Branch A: Section 1: France.

Section 2: French Colonies, Belgium and Colonies.

Section 3: Holland and Colonies, Switzerland, Luxembourg, Abyssinia

Division 9:

Work on the Slavic and Scandanavian Countries;

International Codes.

Branch A: Section 1: USSR.

Section 2: Czechoslovakia, Yugoslavia, Bulgaria, Greece, Albania.

Branch B: Section 1: Scandinavian and Baltic Countries.

Section 2: Poland, Hungary.

Branch C: Section 1: International Codes, Austria.

Section 2: Economic traffic, shipping codes.

[End of Question 2]

Office V:

Evaluation

Office V had the assignment of evaluating and filing in the Archive all messages intercepted by technical means and decrypted, insofar as they were enciphered. It had to check the intelligence and archive value of the traffic supplied it by Office III and the Research Control Center (Forschungsleitstelle) either directly or through Office IV. This material was mostly in a raw state. Office V had to supplement its evaluation of these messages by its own evaluation of newspapers and magazines, and by using reference works and professional literature, and was supposed in each individual case to consult its topical archive and personality card file. It was also to see to it that this topical archive and the personality file were kept up to date as far as possible (see Question 19).

Within the scope of this assignment it was necessary to organize the work so that all intelligence material would be forwarded in the quickest possible way from the Sorting to Office V which then distributed it chiefly by tube to the individual Evaluation Divisions, Branches and Sections.

Office V had the further duty of reproducing its intelligence evaluations, known as "Vertrauliche Nachrichten", and forwarding these to the political, economic and military offices designated by Göring.

To fulfill these assignments the evaluation unit was subdivided from the very beginning into the subject areas:

Foreign affairs

Economic affairs

Security of the State and internal affairs.

Prefixed organizationally to these subject areas were:

Central Information Bureau

Topical Archive

Personality file

Sorting

Distribution of reports

The Chief, Office V:

Exercised professional supervision over the entire office. He gave the directives for the evaluation, which - when formulated by the heads of the several divisions - constituted an extensive document. He served as umpire between the three subject areas in their very frequent conflicts over competence. He exercised professional supervision over the heads of the liaison offices (the division heads and the heads of the liaison offices were subordinate to the director in the personnel set up). The FA had liaison offices with

The AA (Foreign Office)
The RWiM (Ministry of Economics)
The OKW (High Command of the Armed Forces) and Counter Intelligence (Abwehr).
The Prop. Min. (Ministry of Propaganda)
The RSHA (Main Security Agency)

They were responsible for the circulation of the VN's within the above named agencies according to the assigned distribution and for their return to the FA; more important was their mission to ascertain the actual intelligence needs of the subscribers, to pick up information or inquiries from the subscribers, pass these to the correct unit of the FA and to gather information which would facilitate the work of evaluation. For instance, if economic negotiations between Germany and Sweden were impending and if these negotiations were to take place in Germany, then it was important to find this out two or three weeks in advance - not as usual at the very last moment - so as to provide intercept facilities and to collect collateral information in the evaluation section.

Also subordinate to the Chief of Office V was the head of the "FA-school" which had been established during the war after some 2,000 new people had been engaged during mobilization. The school consisted merely of its head and one employee; along with these two the heads of divisions, branches, and sections of V, to a slight extent also of IV, functioned as instructors. Its purpose was primarily to acquaint the new intercept people with the actual requirements of the evaluation division; these people were sent there for courses lasting several weeks. The results of these courses were very satisfactory; the value of the intercept work increased in that less that was unimportant was copied and many things which were important for the evaluation division were no longer disregarded. The psychological results were also favorable; the intercept people had more of a feeling of being an important member of the organization as a whole.

One of the most important tasks of the Chief of Office V was the "distribution list" (see Question 15). Pro forma he was responsible for <u>every</u> distribution of every VN. In practice it was only possible for him to reserve to himself the so-called "big" distributions and he allowed the competent division heads to handle all the rest, some 95 percent. However they were obliged to lay their decisions before him in all cases of doubt.

Division 10 -- Archive Division

This division, called "Archive Division" for short, was a catch all for all fields of the evaluation work which because of their over-riding character could not be taken care of in any one of the three divisions making the actual evaluations.

In the "V-sorting" which belonged to Division 10 and was manned around the clock all the tubes came together. All the intercept results fell in here as if into a big funnel to be forwarded at once in the appropriate channels. Here the results of decryption from Office IV came in, as did all newspapers, magazines, etc.

The "personality file" and the "topical archive" will be treated in detail in the answer to Question 19.

The "Central Information Bureau" was made up of a number of specially trained specialists whose ambition it was to leave no question unanswered, no matter how unusual it might be. For this purpose they had at their disposal the enormous personality file and the very extensive topical archives, a special library of some 4,000 volumes, a large collection of atlases and maps, and finally the possibility of enlisting the aid of all the public libraries in the capital and, through the liaison officers, of various ministries.

Finally, Division 10 was charged with sending the VN's to the subscribers, with checking their return and their delivery for destruction in collaboration with Division I.

The maximum personnel strength of the division was approximately 250.

Division 11 -- Foreign Affairs.

Its task was to evaluate and file in the archives all intelligence material on internal, external, cultural and military affairs of all foreign countries, political, cultural, and military relations of foreign countries with Germany, German foreign policy.

It was set up purely by countries (for details see further on).

Its principal subscribers were:

The Office of the German Chancellor,

The Foreign Office,

Ministry of Propaganda,

High Command of the Armed Forces.

Its maximum strength was approximately 120

Division 12 -- Economic affairs

Its assignment was to work over all messages regarding

Economics and economic policies of foreign countries,

Armament industry of foreign countries,

Trade relations of foreign states with one another and with Germany,

German economics and economic policies, trade polices and armament industry.

During the war: war on merchant shipping.

It was organized by countries and topics. Maximum strength was some 150 officials and employees.

Principal subscribers:

Ministry of Economics,

Military and civilian offices of the armament industry.

Division 13 -- Security of the State and German internal affairs.

Its assignment was the surveillance of individuals and organizations hostile to the state, for practical purposes therefore hostile to the National Socialist Party, Counter Espionage, and keeping tabs on foreign propaganda relating to Germany.

The organization was purely by topic. Maximum strength ran to approximately 90.

Principal subscribers:

Main Security Agency

Counterintelligence

Ministry of Propaganda.

Organization of

Office V -- Evaluation

Since the designations by letters and digits were changed rather often and the same letters and digits corresponded at different times to different parts of the work, only subject designations are given below.

Chief, Office V.

An expert for evaluation

An expert for archive and card files

Liaison office - Foreign Office

" " - Ministry of Economics

" " - High Command of the Armed Forces

" " - Ministry of Propaganda

" " - Main Security Agency

FA-School

Division 10 - Archive etc.

Division Chief

A branch head as deputy.

Central Information Bureau

Personality file

Archive sorting

V-sorting*

Library

N depository and distribution*

Division 11 - Foreign Affairs.

Division Chief

Expert, Head of the archives and (Ansatz)**

Branch: Anglo Saxon Countries and South America

Section: North and South America

Section: Great Britain and Commonwealth.

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* Translator's note: Significance not too clear: V-sorting = sort made in Office V.
N depository = ? Vg ? or message?

** Translator's note: Meaning of Ansatz = intercept control.

Branch: Central, Western and Southern Europe; Near and Middle East,

Section: France, Belgium, Holland, Switzerland, and Colonies.

Section: Italy, Austria, Hungary.

Section: Spain, Portugal.

Section: Rumania, Yugoslavia, Bulgaria, Greece, Syria,
Palestine, Egypt, Arab States.

Branch: Northern and Eastern Europe, USSR, Far East

Section: Poland, Baltic States, Denmark, Sweden, Norway, Finland.

Section: USSR, Japan, China, Thailand.

Division 12 - Economic affairs.

Division Chief

Expert for Division archives and (Ansatz).

Branch: Europe.

Section: France, Belgium, Holland, Switzerland.

Section: Italy, Austria, Hungary.

Section: Spain, Portugal.

Section: Rumania, Yugoslavia, Bulgaria, Greece, Syria,
Palestine, Egypt, Arab States.

Branch: Non-European countries and Eastern Europe.

Section: North America.

Section: South America.

Section: Great Britain and Commonwealth.

Section: USSR, Poland, Baltic States.

Section: Denmark, Sweden, Norway, Finland.

Section: Japan, China, Far East.

Branch: Subject Areas.

Section: German economic and trade policy.

Section: Armament industry.

Section: Coal.

Section: Power.

Section: Steel and Iron.

Section: Non-ferrous metals.

Section: Oils and fats.

Section: Communications.

Section: Shipping.

Division 13 - Security of the State and German internal affairs.

Division Chief

Branch: Security of the State and Defense.

Section: Communist and Leftist Organizations.

Section: Reactionary Organizations.

Section: Churches, Free Masons, Jews.

Section: Espionage.

Branch: Propaganda

Section: Propaganda

Section: Military intelligence

Section: Foreign journalists in Germany.

The organization of Office VI and the Research Control Office (Forschungsleitstelle) will be treated separately.

Question Number 3: Names of persons known to you and their activity within the Forschungsamt.

Ministerialdirigent Georg SCHROEDER

Chief of Office IV

At present: Holzminden, Fürstenberger Str. 4a.

Oberregierungsrat Dr. Martin PAETZEL

Chief of Division 6

At present: Berlin-Zehlendorf, Am Hegewinkel 112

Oberregierungsrat WAECHTER

Chief of Division 7

Captured by the Russians in Berlin in 1945, since 1948 in a "Silence Camp" (Schweigelager).

Oberregierungsrat SCHULZ

Chief of Division 8

Died May 1945

Oberregierungsrat Maximilian WENZEL

Chief of Division 9

At present: Hirschzell Nr. 50 b/ Kaufbeuren.

Regierungsrat Bruno KRÖGER

Head of Branch 6 A

Hirschzell Nr. 41 b/ Kaufbeuren

Regierungsrat v. STUBENRAUCH

Head of Branch 7 A

Emigrated to Chile

Regierungsrat Dr. MATTHIES

Head of Branch 7 B

Last address known to me: Hildesheim

Regierungsrat Dr. HAUMER

Head of Branch 8 A

Arrested 1945 in Berlin by the Russians; according to the statement of another prisoner he was in the concentration camp Neuengamme until it was dissolved in 1947; said to have been transferred to the concentration camp Buchenwald; cannot be traced further.

Regierungsrat ENGELKE

Head of Branch 8 B

Precise address not known, at present in the Ruhr district.

Regierungsrat Bruno LEHR

Head of Branch 9 A

At present: Mannheim-Freudenheim, Rebenstr. 151.

Unfortunately I do not have at my disposal a precise list of names and no addresses for the relatively large circle of cryptanalysts aside from the complete list above of the administrative heads. In particular I am without names and addresses of those in the intercept and evaluation work.

In case of need, for instance if need should arise to set up a working group in one or the other special fields, there would be a possibility of my getting a look at existing address lists which are estimated to include 90 to 95 percent of the experts and assistants in all fields. It is true, I could only get a look at this material on the assumption that I could give a satisfactory explanation of my desire to do so.

Question Number 4: In which division and in which section were you employed? When? [By Kröger]

The division (Abteilung) for the decipherment of cryptograms of foreign countries in the diplomatic field, called Abteilung IV., had the rank of a division down to February 1940 and comprised the branches (Gruppen) A, B, C and D, which in turn were divided into separate sections for the several countries (Länderreferate).

From April 1936 until February 1940 I was active in Gruppe IV B as follows:

1936 as worker (Sachbearbeiter): solution of French diplomatic telegrams with the aid of codes which were already partly solved;

1937 - 1938 as specialist (Referent): solution of new French diplomatic codes and new French colonial codes;

1939 - February 1940 as section head (Referatsleiter): analysis of encipherments of French colonial systems; solution of encipherments of Belgian diplomatic codes and Belgian colonial systems.

After the reorganization, the Cryptanalytic Division IV had the rank of an Office (Hauptabteilung) and embraced the four Divisions 6, 7, 8 and 9. The national sections of the old branches (Gruppen) A - D were assigned anew to Divisions 7 - 9, while Division 6 was a new creation and was to concern itself primarily with the analysis of super-encipherments. I was appointed branch head (Gruppenleiter) and was active here until the capitulation. In 1941 I was made Government Councillor (Regierungsrat). My field of endeavor embraced:

1. Analysis of super-enciphered hand systems and cipher machines of all countries;

2. Devising and testing own cryptographic systems; production of cryptographic material for own systems;

3. Training the rising generation in cryptanalysis by special courses; maintaining a card file of cryptographic systems of all countries, procuring all literature in this special field.

It must be stated that due to war conditions, the duties listed under 3) were not carried out to the fullest extent.

Question Number 5: What did you work on? Systems? Results? [By Kröger]

The following listing can, of course, give only a survey of the systems worked on and the results achieved and can only take into account the more important tasks, since any compilation covering work extending over about ten years will necessarily contain gaps when made from memory. It is to be assumed that these gaps involve less extensive assignments and those which did not stand out above the average.

Not included are such tasks as the production of cryptographic material for our own use within the Forschungsamt, i.e. for teleprinters of the Siemens Type SMF 52 AB and C or the hand systems, in particular double transposition, used as emergency systems.

The experience gathered will be given in detail in the treatise "Characteristics, Analysis and Security of Cryptographic Systems".

The following listing of the systems worked on and the results achieved is to be taken in the light of these preliminary remarks.

The work included:

1. Various French 4-digit diplomatic codes, non-alphabetic [2-part], with numerous variants for frequent groups. These codes, which were always replaced by new ones at greater or lesser intervals of time, were in general used only for specific special fields and specific links, so that 5 to 10 of these codes were always in use side by side. These codes were read currently in full. In the case of new codes the solution of the first encrypted texts appeared in from two to six weeks, according to the amount of traffic received and its content. Messages of a purely political nature were decrypted quicker than reports on commercial agreements, shipping reports, etc.

2. Two French 5-letter codes with vocabulary in alphabetic order [1-part] for colonial traffic. Completely solved.

3. French 4-letter code with vocabulary in alphabetic order used in traffic with the Far East. Complete solution with only 40 telegrams was possible within two weeks.

4. Various French encipherments of 5-digit codes in colonial traffic. Analysis showed encipherment by substitution tables differing for each link. Solution was not attempted because traffic was scant.

5. French encipherment system for colonial traffic consisting of encipherment with the text of a given book. Some messages in the same key made possible the decipherment of a few lines in this book. Since it was not possible to identify and procure the book, further work was stopped because the content of the traffic was relatively unimportant.

6. French enciphered diplomatic system. 4-place code with 2-place substitution table and simultaneous transposition of elements of the groups of code text in three different phases. System was completely analyzed and watched for years. Since no more than 3 - 5 telegrams with the same substitution table and phase were received, it was impossible to attempt solution.

7. Belgian 4-letter code, vocabulary in alphabetic order. Code completely solved. Generally used with 2-digit substitution tables which changed more or less frequently. At first the substitution tables were always solved and the telegrams were read currently. Later, with a more frequent change of substitution tables, solution of these tables was limited due to the dearth of traffic.

8. French 4-digit code for diplomatic traffic. Only used with a superencipherment number equal in length to a book page which changed daily. Traffic for one day sometimes yielded as many as 25 messages in the same key. Attempts at solution were unavailing because the encipherment number was not applied as additive and therefore differencing within the columns was fruitless. Cryptographic material seized after the occupation of Paris, including the monthly encipherment pads belonging to this system - with one page for each day of the month, confirmed our analysis. The remaining material belonging to this system was not captured.

9. French 5-digit code enciphered by a transposition system with key numbers. Used by the DeGaulle Government. Analysis was possible on the basis of compromised texts. A partial solution of the compromised texts

showed that an unknown basic code was involved. In view of the meager amount of traffic available work was discontinued.

10. Swiss substitution systems (Spalten-und Springcäsaren)* completely solved.

11. Swiss digit codes with groups of varying length (3- and 4-place), always with one code in German and a second in French. Size about 2,000 groups. Enciphered with 100 different page substitution tables, which likewise had groups of different lengths. Line values were not enciphered. In the course of years the codes and substitution tables were replaced several times. Completely solved.

12. Swiss Enigma Type K. Solved first as a polyalphabetic substitution (Spaltencäsar), thanks to a considerable number of messages in the same key. After the wheels were re-wired, a reconstruction of the wirings was achieved repeatedly on the basis of compromised texts. Read currently in full until about the beginning of 1944 when the new indicator system, combined with the change of wheel order from message to message, made it necessary to break into each individual message or into every second message. From then on the work was discontinued because it took too much time.

13. Japanese cipher machine. Encipherment is based on the matrix principle, but the alphabet is divided between two matrices, namely a large matrix with 20 consonants and a little matrix with six vowels. Mildly irregular stepping. In the machine several matrices, arranged one and after another, became effective on which are set up a yearly key, a semi-annual key, a 10-day key and a daily key. On the basis of solutions for single days, facilitated by the generally stereotyped message beginnings, it was possible to reconstruct the keys and to devise a paper gadget by the aid of which all messages of the year could be read. However the technical construction of the machine did not become known. It was possible to read the messages currently without any great expenditure of time.

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* Translators note: For a description of these types of polyalphabetic substitution reference is made to the forthcoming publication DF-240, IA7 and IA8.

Later things became more difficult inasmuch as the typical message beginnings and frequently recurring concepts were replaced by 3-place code groups which were inserted in the Kana text. Nevertheless the messages were still read.

Finally structural innovations were made in the machine. Studies of the text then gave no clues for a possible solution.

14. Japanese transposition systems with grille and key numbers. Analysis was relatively easy on the basis of messages in the same key and of similar length with identical or similar message beginnings. In favorable cases individual messages could be solved to quite an extent. Work on the system had to be discontinued because the time expended was too great for the results obtained.

15. Several Spanish 4-digit codes enciphered with encipherment tables differing for each link, the encipherment numbers of these tables were added (mod 10) to the code text.

On minor links 10 different tables were used, each with 100 4-digit groups. Table 1 was used for all messages whose number had a 1 in the digit position, i.e. message numbers 1, 11, 21, etc.; table 2 for all message numbers with a 2 in the digit position, etc. An indicator group was associated to each telegram number from 00 to 99 and this indicator group stood in one of the first 5-positions of the cipher text, according to the link, and at the same time designated the appropriate substitution table.

On major links 50 different encipherment tables were used, each with 120 4-digit groups. Table 1 was for telegram numbers 1 and 51, table 2 for numbers 2 and 52, etc. Here again the telegram numbers were always replaced by an indicator group.

Several links could be solved successfully on the basis of adequate traffic. Thus it was learned that various links with different encipherment tables could be reduced to the same basic code, so that already existing difference catalogues could be used again successfully.

16. The second major Spanish system for diplomatic traffic revealed as a peculiarity indicator groups, in which were contained the group count of the preceeding telegram in the same direction on the same link. An analytic study was planned but could not be carried out. The study was to have been carried out first with the idea of seeing whether instead of encipherment tables a book was being used with a serial encipherment number which consisted of a key-book from which running keys were selected over and over again.

17. Study of Hungarian telegraphic traffic showed that encipherment numbers of limited length were employed. As a rule the length of the encipherment number was accommodated to the length of the telegram. More rarely a shorter encipherment number was used several times to encipher a longer telegram. Observation of the traffic over a fairly long period showed that the encipherment numbers were changed so frequently that there was no prospect of obtaining enough material in the same key to make possible solution first of the encipherment numbers and later of the code.

18. The Russian radio [2-channel] cipher machine with a channel for plain text and a channel for cipher text could be studied after the Technical Division had constructed a receiving device which at the same time removed the scrambling. The five elements of the radio alphabet [bands] were enciphered singly through five wheels which move evenly. The wheels could be set up new each day corresponding to the daily key; but the period was constant and invariable. It was possible to solve this completely.

19. From the Russian radio 9-channel cipher machine we had only one piece of text available for all cables, which had been unscrambled manually, but it was too short to permit of any analysis. However the repetitions within the texts of each channel and between the texts of the different channels were such that solution must be regarded as possible if complete traffic for one day were available.

20. The Finnish Hagelin machine (1936 model). Using various matched plain-cipher texts it was possible to reconstruct the machine setting for several days. In this connection it was learned that, because of the inadequate security of this early model of the Hagelin machine, the machine setting was changed several times within one message by the cipher clerk who turned the wheels by hand so that consecutive text with the same setting ran to 200 - 300 letters at most. These text lengths could not be solved in purely analytic fashion.

21. Messages enciphered with the American Hagelin machine could be recognized by the double letters in the indicator group which served for the production of the message key by using the machine itself. We did not break into the system because the pre-requisites were not discovered during our constant observation, i.e. neither messages in the same key turned up nor was the requisite minimum length attained in individual messages.

22. The Dutch 4-digit one-part code, which could likewise be used as letter code, was read in full. The later use of encipherment numbers of limited length as additive did not alter the situation.

~~TOP SECRET~~

A R M E D F O R C E S S E C U R I T Y A G E N C Y

DF-241 Part II

53/51/TOPSEC/AFSA-14

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DF 241 Part II 53/51/TOPSEC/AFSA-14

The Forschungsamt

1. Attached is an Armed Forces Security Agency translation of further answers to questions submitted to former members of the Forschungsamt. (For list of Questions see Part I.)

2. Part I contained answers, presumably by Dr. Krüger, to questions 1 - 5. Part II contains supplemental answers by Dr. Huppertsberg (questions 1, 3 and 4) and by Dr. Kurtzbach (question 3). Answers to other questions will follow.

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DF 241, Part II

Question 1: Organization of the Agency. [HUPPERTSBERG]

(Office VI, Divisions 14 and 15, and Office II, Division 5)

The Agency comprised six Offices whose heads were subordinate to the director of the Agency.

Office VI had the task of dealing with all technical matters and with carrying on the technical operations of the agency. The Chief of the Office employed the subordinate Divisions 14 and 15 for these purposes.

The Chief of Office VI was responsible to the Director for carrying out assignments and received from him his basic directives. He assigned the tasks imposed on him to the subordinate Divisions according to the printed plan for the distribution of assignments and reported to the Director on the results.

It was the duty of Division 14:

To determine technical needs in collaboration with the other Divisions of the Agency;

To clarify technical possibilities by studying scientific and technical literature, by cooperating with scientific and technical institutions and with other authorities - in particular with the German Post Office Department, the authorities of the Armed Forces and with industry;

To clarify and identify new communication procedures and to develop apparatus and installations for intercepting and solving such procedures;

To fix directives for technical developments and to coordinate these developments with other authorities to avoid duplication of effort;

To negotiate with the German Post Office Department regarding the technical admissibility of the devices and installations to be developed, and to secure the approval of the German Post Office Department;

To conduct practical experiments for the development of apparatus and installations;

To prepare models in its own experimental work shops and to test these devices;

To prepare technical specifications for the commercial production of apparatus;

To negotiate with the plenipotentiary of the Signal Corps (General Fellgiebel) for the assignment of priorities in industrial production;

To negotiate with the Director General of Air Force Ordnance under the Air Ministry and High Command of the Air Force for the procurement of raw material for industrial production;

To let production contracts to industry, and to exercise technical and time supervision over industrial production;

To make technical tests and to accept finished apparatus and installations erected;

To prepare technical operating instructions for apparatus and installations;

To instruct the operating personnel in the use of the instruments.

It was the duty of Division 15:

To set up and maintain all technical installations in the Agency building, in particular installations for the communication of the Agency with its subordinate offices and with those using its material;

To handle technical procurement, accounting, administration and shipment of technical material;

To supply, maintain and operate motor vehicles.

(The technical installations of the A, B, C and D-Stations were to a large extent property of the German Post Office Department, they were erected by the personnel of the Post Office Department and, according to postal regulations, were only to be serviced and maintained by officials of the Post Office Department.

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Like the other divisions of the Agency, Divisions 14 and 15 were subdivided into:

Branches (e.g. 14A, 14B .....), these into

Sections (e.g. 14A1, 14A2 .....), these into

Work areas (e.g. 14A1a, 14A1b .....), etc.

which were guided by technical-professional points of view.

Supplement 1 shows the break-down of Office VI, Technical Matters, as it existed in essence during its final years. This supplement has been prepared from memory and may depart slightly from the printed Table of Organization of the Agency which in many respects was only an ideal which could not be fully realized because of lack of personnel and because of often changing vicissitudes.

Special mention must be made of Section 14 B 3 which in the printed T/O was still designated as "Microphone and Listening Technique".

In the field of microphone and listening technique from 1937 to 1939 only a single technician (Mr. Dix) was active who made sensativity experiments with microphones in the offices of the Agency in Berlin. When the first practical experiment was made by installing a microphone in the Agency building in order to watch personnel in an effort to guard against espionage, the microphone was discovered and because of the dissatisfaction of the personnel the Director ordered further work in this field discontinued and Mr. Dix left the Agency and went to an industrial job.

Since this left a section free in the T/O, a new section was set up which was concerned with questions of impedance matching and amplifier engineering of a general nature for the other sections of Division 14. This change probably never appeared in the official Table of Organization.

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Supplement 1 (Sheet 1)

Office VI: Technical
Division 14: Planning, Development, Testing

Branch	A: General Technical	B: Wire Communications	C. Radio Communications
Section	1. Technical writings	1. Wire telephone	1. Radio telephone
	a) Technical reporting Technical Library	a) Systems (basic)	a) Systems (basic)
	b) Technical translations	b) Instrument development	b) Instrument development
	c) Patents	c) Testing	c) Testing
	2. Experimental workshops and production	2. Wire telegraph	2. Radio telegraph
	a) Mechanical shop b) Electrical shop c) Construction and drawing room d) Experimental communications installation in Glienicke	a) Systems (basic) b) Instrument development c) Testing	a) Systems (basic) b) Instrument development c) Testing
	3. General planning	3. Wiring	3. Radar and D/F
	a) Priorities	a) Line adaptation filters	a) Procedures (basic) Wave propagation
	b) Raw materials	b) Amplifiers	b) Instruments and antennas Development
	c) Standardization Harmonizing types with other authorities	c) Distributors and remote controls	c) Evaluation aids and maps.

Office VI: Technical
Division 15: Technical Operations

Branch	A. Construction and maintenance of installations.	B. Operations	C. Technical Administration
	1. General installations	1. Communications	1. Technical procurement
	a) High voltage installations	a) Telephone exchange	a) Securing bids
	b) Signal installations	b) Teleprinter center	b) Letting contracts
	c) Tube installations	c) Radio stations	c) Checking delivery dates
	d) Heating plants		
	2. Communication installations	2. Technical supervision	2. Accounting
	a) Telephone installations	a) Center for technical supervision	a) Budget control
	b) Teleprinter installations	b) Elimination of interferrence (anti-jamming?)	b) Auditing
	c) Radio installations		c) Settlements
		3. Motor vehicles	3. Materiel administration
		a) Maintenance	a) Stock records
		b) Operation	b) Depot of replacement parts
			c) Shipping

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Duties of Office II:

Office II handled the assignment of tasks to the several Out-Stations and the sorting of material coming in from service stations B, C, D and E, as well as the distribution of this material to the appropriate units of the Agency. Office II employed for the fulfillment of these tasks its Divisions 4 and 5.

Division 4: Handled intercept control (Ansatz); assignment of tasks to the service stations and checking their results.

Division 5: Handled the sorting and distribution of raw material coming to the Agency.

- - - - -

Division 5 (Sorting)

The author of this paper no longer recalls the precise organization of Division 5 into branches and sections because this changed considerably during the later years, however, the working methods of Division 5 are shown in essence by the Routing of Traffic in Supplement 2.

The material intercepted by the out-stations was forwarded to Division 5 in various ways, namely:

a) From stations outside Berlin by railway express in locked metal cases to the various Berlin stations where the cases were picked up by the motor service.

b) By the agency's own teleprinter connections (cipher teleprinters) if the material was urgent.

c) From Berlin stations through the agency's own tube connections.

The material itself might consist of:

1) Manuscript texts from A-Stations. (This material, as sole exception went from the outside direct to Office V and did not come in contact with Division 5;

2) Typewritten texts, which had been prepared from radio intercepts at the B and C-Stations;

3) Teleprinter messages, which were sent ahead of the material under 2) in urgent cases;

4) Teleprinter texts (page printer or tape printer), which had been intercepted at the D-Stations;

5) Photographic copies from the F-Stations;

6) Spools of steel wire from A-Stations outside Berlin, magnetophone tapes and record disks from C-Stations, whenever languages were involved for which there was no interpreter at that particular station or when an exact recording was necessary for archive purposes;

7) Operational reports of the stations to the Intercept Control Division (4) regarding assignments carried out or not carried out;

8) Technical reports regarding instruments and installations.

The material under headings 1 to 6 might consist of either plain text or cipher text.

It was the duty of the sorting personnel of Division 5 to receipt for all incoming material, to log it as received, to stamp the distribution solely according to the type of material, not according to content, and to distribute it accordingly.

Distribution was by the following scheme:

All plain text on paper to the Sorting of Office V.

All cipher text on paper to Office IV.

Spools of steel wire from A-Stations to Station A3 in Berlin which prepared a paper text which was then sent to Office V if in clear and to Office IV if enciphered.

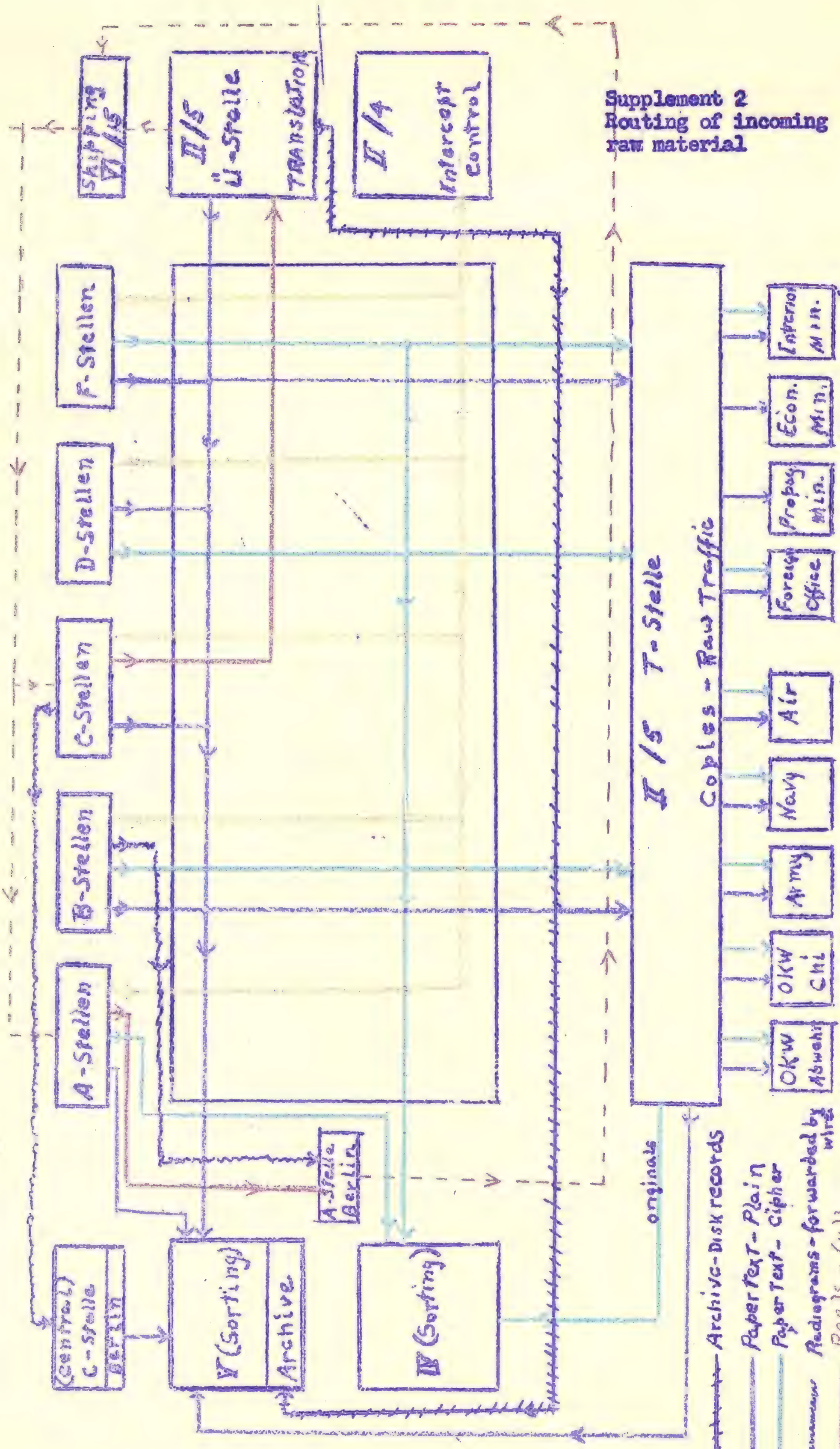
Magnetophone rolls and disk records from C-Stations to the Ü-Station (translation station) of Division 5 which prepared German plain text which then went to Office V.

(Wire and magnetophone tape was electrically erased after processing and was sent to the supply unit in Division 15 for reuse. If original texts were to be kept in the archive, then disk recordings were cut from the wire or tape and these recordings went to the Archive in Office V.)

Operational reports to Division 4, Intercept Control;

Technical reports on operations via Division 4, Intercept Control, to Division 15.

Moreover a certain portion of the B-material was sent as so-called raw material to the T-Unit of Division 5 and was there reproduced by typewriter or by photography before it was sent to Office IV or V. The reproduced material was sent directly from Division 5 by tube to other agencies (in particular OKW/Chi and OKW/Abwehr) on the basis of agreements between the FA and such other agencies. The original then went to Sorting V or IV.


Supplement 2
Routing of incoming raw material
Shipping
II/S
"U"-Stelle
TRANSLATION
II/4
Intercept Control
F-Stellen
D-Stellen
C-Stellen
B-Stellen
A-Stellen
A-Stelle Berlin
(Central)
C-Stelle
BERLIN
V (Sorting)
Archive
IV (Sorting)
I/S
T-Stelle
Cables - Radio Traffic
Foreign Office
Propaganda Min.
Econ. Min.
Interior Min.
OKW Abwehr
OKW Chi
Army
Navy
Air
Armed Forces
Civil Authorities
Originals
Archive-Discard records
Paper Text - Plain
Paper Text - Cipher
Radiograms - forwarded by wire
Reels - full
Reels - empty
Operational reports

DF 241, Part II

Question 3: Personalities. [HUPPERTSBERG]

VI. STABENOW: Oberregierungsrat, Chief of the Office.

Assignment of tasks to Divisions 14 and 15, which belong to Office VI;
Coordination of the technical duties of the Agency with the assignments of the other Divisions;
Setting up personnel and material budget for technical matters;
Conducting negotiations on technical matters of a basic character with other authorities, in particular the Ministry of Posts;
Reporting to the Director on the work of Divisions 14 and 15.

STABENOW was by training a graduate engineer in the field of machine construction and was not acquainted with the field of communications. From 1933 on he was active in the Agency as Branch Head for the Evaluation of Material and later occupied the position of Chief of Office VI merely because of his seniority; consequently he was not professionally suitable for this position and played an unfortunate role as intermediary between the Director and the Chiefs of Divisions 14 and 15.

His character was in the main good, but he was weak and vacillating in his dealings with personnel.

At present living in Eutin in Holstein where he has his own mechanical workshop for die stamping.

14 Dr. HUPPERTSBERG, Oberregierungsrat, Chief of Division 14.

Professional guidance of Division 14 including: technical planning, development, industrial production, testing and acceptance;
For his training and activity in detail see Question 4.

14A. STREB,

Indoctrinated employee, Head of Branch 14A.

Graduate engineer in electro-technology;

Studied scientific and technical literature and prepared abstracts for the other groups of the Division;

Directed the technical library, the preparation of technical translations and work on patents;

Directed the experimental workshops which prepared models for the other units of the Division;

Directed the construction and drafting unit; general technical-economic planning in connection with the letting of contracts (procurement of raw material).

Basically STREB was equal to his tasks because they required no special knowledge of communications.

His character was irreproachable, conscientious, sometimes took things a bit easy.

After the war STREB took over his father's motor repair shop in Offenburg, Baden.

14A1 and 14A3 STREB, see above. These sections were headed by Mr. STREB, due to lack of personnel.

14A2 KREUZER, technical employee.

Head of the section;

KREUZER was an engineer in electro-technology and communications who had finished the Technical "Mittelschule" [approximately equal to a "BS"];

In charge of the mechanical and electrical experimental shops of Division 14;

Was responsible for the work of the construction and drafting unit;

Production of all technical specifications and plans for devices to be produced industrially;
In charge of negotiations and correspondence with the production industry and responsible for technical supervision and the keeping of deadlines.

KREUZER came from industry and was acquainted with all necessary aspects of production, in particular with standardization. A capable specialist with initiative and energy who performed his tasks well. Frank and honest, very industrious; he constantly inspired his personnel and was an example to them.

Now living in the East Sector of Berlin and working in a cable factory as a testing engineer.

14B VOGEL, technical employee, Acting Head of Branch 14B.

His official position was Head of Section 14B1.

VOGEL was a graduate Engineer in the field of communications and had worked after graduation in the field of telephony with Siemens and Halske, Berlin, where he gained a good knowledge of the workings of automatic telephone switchboards.

For his activities see under 14B1.

VOGEL was an expert in his field and worked with diligence and energy to carry out his tasks. He was young and not fully matured and was too easily influenced by his friend ODEN, Chief of Division 15, who used him to further his own ends.

Present address not known, probably in Saxony in the East Zone.

14B1 VOGEL, see 14B, Section Head - Wire Telephony.

Duties of the section: Development and testing of telephone installations and instruments of every kind and of supplemental devices for magnetic recording.

Worked on technical problems of the A-Stations.

14B2 HEMPEL, technical employee, Section Head - Wire Teleprinters.

HEMPEL was a graduate engineer in communications who completed his university training and then worked with several smaller firms building telephones and radios. He had fairly good knowledge and adjusted himself to his field quite well.

Duties of the section: Development and testing of wire teleprinter installations and devices of every kind, in particular of special teleprinters for the work of Branch 14C2, and of teleprinter exchanges; handling technical problems of the D-Stations.

HEMPEL was industrious, conscientious, and dependable, professionally he was good in matters of detail but somewhat lacking in initiative and required the personal assistance of the division chief.

Present address not known. After the war HEMPEL returned to his home in the Sudetenland but then either fled or was exiled.

There is a rumor that he is somewhere in the US Zone, possibly in Munich or Stuttgart.

14B3 MAHLER, technical employee, Section Head - Wire Technique.

MAHLER was a communications engineer, graduate of a technical Mittelschule, who had also attended the technical Hochschule for several semesters.

He came from the sound film industry and thoroughly understood amplifier technique, including the adjustment of instruments and tone recordings, along with appropriate remote control.

Activity of the section: Development and testing of amplifiers, in particular with automatic volume control and audio filters;

Impedance matching of amplifiers in apparatus of all kinds; Combining instruments into groups with the necessary remote constrols.

MAHLER was industrious, ambitious, and of faultless character. Present address unknown.

His home was Essen.

14C

TRÜBENBACH, Regierungsrat, Branch Head - Radio Technology.

TRÜBENBACH was a graduate engineer who completed his university training specializing in high-frequency and had worked after graduation in the laboratory and in operations of the German Broadcasting Company. He was thoroughly grounded in high-frequency technique, audio-frequency amplification and recording, and was able to increase his knowledge significantly during the course of his activity in the Agency. He was quite equal to his task of guiding the Radio Technology Branch and fructifying it.

Activity of the Branch "Radio Technology": For details see the subordinate sections.

TRÜBENBACH was very dilligent and ambitious, frank, honest and upright, and on the whole a clever fellow. Thanks to his mental ability and his well rounded personality he was perfectly able to head Branch 14C successfully.

In September 1945 TRÜBENBACH was taken from his dwelling in Berlin - Wilmersdorf in the US Sector of the city at night by men who claimed to be police officials and taken ostensibly for a "brief questioning" to the "Kommandantura". There has been no trace of him since. Inquiries by his wife at German and U.S. offices in Berlin were absolutely without result.

14C1 Dr. BAUMEISTER, technical employee, Head of Section 14C1 - Broadcast Technology.

Dr. BAUMEISTER after completing his university training in physics worked on the development of laboratory equipment for instruction purposes with several small firms. During his years in the Agency he had become acquainted with all problems of broadcast technology and for that reason, as well as because he was highly regarded as an expert, he was well fitted to head the section.

Activity of the Section: "Broadcast Technology": Planning and development of ultra-modern installations for receiving and recording radio broadcasts and radio telephone systems of all kinds, together with the appropriate special supplemental devices for receiving single side-band systems and for speech decipherment;

Work on the technical requirements of the C-Stations.

Dr. BAUMEISTER had a very good general training in physics which enabled him to attack in a thorough and comprehensive manner the problems which arose and he had great experimental skill in the practical solution of problems.

His character was beyond reproach, a frank and honest nature, adjustable, very diligent and conscientious.

Present activity: repair man and salesman in a radio shop.

14C2 JUNG, technical employee, Head of Section 14C2 - Radio Telegraph.

Activity of the Section: Planning and erecting modern installations for receiving and sending radio telegrams in all systems, in particular:

High-speed Morse, up to 500 words per minute;

Hellschreiber (letter picture system);

Multichannel systems on cw channel, keying with impulse sequence;

Systems with double current carrier keying;

Multichannel audio-channel systems;

Radio teleprinter systems of all kinds with start-stop and synchronizing signals;

Automatic coding and decoding systems for radio telegraphy (teleprinter?).

JUNG had excellent general training in physics and much skill in experimentation. Ambitious and with great initiative in attacking the problems put to him he was very well suited for the guidance of this section. Character beyond reproach.

Present address unknown, it is possible that he returned to his home in the Saar.

14C3 GRASHOF, Technical employee who had completed the Technical Mittelschule.

Head of the Section - Radar and D/F Technology.

GRASHOF had a good knowledge of communications, in particular in the high-frequency field, radio navigation and wave propagation. He was taken over by the agency from the German Experimental Institute for Aviation in Adlershof near Berlin and was able to increase his knowledge materially.

Activity of Section 14C3: Study of wave propagation in connection with frequency, time of year and day, and the radiation pattern of antennas; application of this knowledge to the practical use of radio instruments of all kinds;

Planning and development of directional antennas, in particular rhombic antennas for short and ultra-short wave; development and testing of direction finders of all kinds, particularly Adcock direction finders.

with single channel r.f. amplification and panoramic sight screens; selection of suitable sites for D/F and radio installations;

Procurement of D/F evaluation instruments and special cartographic material for evaluation.

With some professional instructions from his superiors GRASHOF was able to conduct his section with success; He was industrious, had good will, character generally satisfactory, had spells when he was very reserved; was very sensitive to admonitions.

Present address: a small village in Württemberg, U. S. Zone; presumably unemployed.

15 ODEN, Regierungsrat, Chief of Division 15

Activities: Professional direction of Division 15: Technical operations, communications, motor vehicle service, technical administration. For details see activities of the Sections.

ODEN was a graduate engineer who had completed his technical university training in communications. After graduating he worked for Siemens and Halske in the field of teleprinter technique with start-step printers (Springschreiber) and of teleprinter exchanges and had a good acquaintance with this special field. He also had practical experience in communications work. He headed Branch 14B (Wire Communications) for several years in the Agency and did not become head of Division 15 until the final year of the war. He employed his communications personnel to good purpose and the communications service of the Agency functioned excellently under his guidance till the very end. He was very industrious, very conscientious in his

work, and a veritable Puritan in his zeal; he was always 110 percent efficient. For this reason and because he was basically cynical he was inclined to criticize sharply all superiors and co-workers regarding whose character he was in doubt; although his work was perfect, he was personally unpopular except with a few of his immediate disciples.

Present address not known.

15A BLÜMM, technical employee, head of Branch 15A.

Activity of the Branch: Construction and maintenance of all technical installations of the Agency insofar as they were not property of the Post Office Department.

BLÜMM was a graduate engineer who had completed his university training in communications and then built automatic telephone exchanges at Siemens and Halske. He had moderately good acquaintance with the work in this field and during his time with the Agency successfully acquainted himself with all current problems of high tension and communications technique. He constantly developed the technical operations of the Agency and of the later alternate locations and kept everything in working order to the satisfaction of all concerned.

BLÜMM was sometimes a bit easy going but basically well intentioned.

Character beyond reproach.

Present address unknown, it may be Munich or his native Sonthofen/Allgäu.

15A1 ZENDER, technical employee, Head of Section 15A1.

Activity of the section: Planning and errection of high-voltage installations (light and power, elevators, carriers, emergency current), low voltage installations (signals, vault and room security systems, tube installations) and heating plants;

Maintenance and repair of the above.

ZENDER was an engineer in electro-technology who had completed the technical Mittelschule. Professional acquaintance with the field was average and he required the support of his superiors in carrying out his tasks.

Industrious, character beyond reproach.

ZENDER is supposed to have spent four years in prison camps in the East Zone and to be living at present in Berlin, West.

15A2 ODEN, see: Chief 15.

This section was directed personally by the Chief of the Division due to lack of personnel.

15B ODEN

This branch was directed personally by the Chief of the Division due to lack of personnel.

15B1 GRUNERT, Technical Regierungsinspektor.

Section Head 15B1 (Communications Operation).

GRUNERT originally was a heating engineer in the Navy and had no knowledge of communications. He worked willingly, however, and directed the employment of operating personnel, largely women, with patience and skill. In the course of time he acquired the absolutely necessary technical knowledge.

Activity of the section: Carrying on communications, teleprinter and radio work of the Agency with its out-stations and its subscribers.

Present address not known, probably interned in the East.

15B2 ZENDER, see above, served simultaneously as Head of 15A1 due to lack of personnel.

Activity of the section: Trouble shooting for all installations of the Agency building, insofar as these were not property of the Post Office Department, and rendering technical first aid, particularly to the night shifts.

15B3 (Name not recalled). The head of the motor pool was a former top sergeant of the Army Motor Vehicle Service who was later recalled to active military service. The position of Head of the Section was never again filled officially, but the duties were performed by the senior chauffeur of the moment.

15C BRUCHMANN, Major of Police, retired, Head of Branch 15C. With subordinate personnel from the administrative service. Activity: procurement of technical material, supervision of industrial production, accounts and auditing, industrial production, accounting and testing of products, stock accounting of all technical devices.

BRUCHMANN was an old mature administrator with much practical experience who performed his task calmly but surely.

Present address: Berlin. West.

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Question 4: In which division and section where you active? Then?

[HUPPERTSBERG]

Dr. HUPPERTSBERG, Oberregierungsrat, Chief of Division 14.

Born in 1906.

Attended Realgymnasium and Oberrealschule. Abitur 1927.

While in school he was already active as a radio amateur, was recorded in 1928 as a member of the American Radio Relay League, West Hartford, Conn., and carried on radio telegraph and voice communication with all continents using his own instruments.

1927 - 1928	Practical work at the Rheinisch-Westfälische Elektrizitätswerk, Essen.
1928 - 1931	Studied at the University of Bonn: general physics, theoretical physics, technical physics, mathematics, chemistry, philosophy.
	Doctoral dissertation in the field of radiation, rating "very good",
	Oral examination (Prof. Konen and Grebe), rating "very good" (16.12.31).
29.7.1932	Doctor of Philosophy
1.1. - 30.9.32	Scientific work in his own laboratory on wave propagation and related topices.
Oct 32 to Sept 33	Prussian meteorologic service, Essen.
	Head of the weather radio service and advisor on flight security service;

Scientific investigation of wave propogation in relation to weather;

Training of radio operational personnel.

1.1.34 to 5.5.36 — Technical expert in the Ministry of Defense, Berlin;

Development of modern radio apparatus of all kinds for the Armed Forces, in particular highly sensative medium, short, and ultra-short wave receivers, D/F sets and remote control devices.

Testing of developmental models from industry (Telefunken and Lorenz);

Expert on all questions of wave propagation and measurement of field intensity;

Measurement of antenna systems, in particular directional beam;

Direction of the signal communication experimental installation of the Ministry of Defense in Kummersdorf near Zossen.

5.5.36 — Transferred to the Air Ministry because no opening in the T/O of the Army.

Till about 37 — Section Head in the FA for all radio activity of the Agency.

Duties the same as in the Ministry of Defense plus planning of modern receiver installations with the necessary systems for forwarding results to the Agency in Berlin.

To about mid-1938	Branch Head for Communications of the Agency. Activity approximately the same as that of the Chief of Division 15 after reorganization.
Mid-1938	Branch Head of planning and development of all communications, installations and devices of the Agency.
1.10.38	Appointed Regierungsrat
About 1940	Chief of Division 14 in the new organization. Planning, development, testing, see T/O of Division 14 in Supplement 1. Activity: Guidance and supervision of the personnel of the Division, some 90 persons. Activity of Division 14: Scientific and technical clarification of new communication procedures and deciding which procedures were of use to the Agency; Development of new devices as well as measuring and testing devices of other authorities and of industrial firms; Collaboration in and coordination of development with the development sections of scientific institutes, commercial firms and of Army, Navy, and Air Force, also Post Office Department; Construction of models in own experimental work shops; Preparation of specifications for serial construction of devices by industry; Negotiations and correspondence with industry regarding possibilities of manufacture, delivery dates, procurement of raw materials; Planning modern fixed and mobile radio receiver installations with directional antennas, highly

sensative receivers, D/F sets, as well as with modern supplemental devices for multi-channel telegraphy and telephony for the teleprinter traffic of the agency using cipher teleprinters for forwarding of material by radio channels to the receiving center in Berlin and for recording written and voice traffic.

Identification of unknown new communications methods of every kind by the application of pilot carrier frequencies in single side band systems, separation of the individual channels in systems with synchronized signal sequence;

Constant training of scientific and technical personnel of Division 14;

Personal and social needs of the personnel;

Protecting inventors and dealing with patents;

Conducting technical correspondence of the Agency regarding practical use of instruments in practical collaboration with the Armed Forces and the Post Office Department.

1.1.1944 Appointment as Oberregierungsrat.

8.5.1945 End of activity when the work of all German agencies was ordered discontinued by the Allies.

Post War: Approximately one year: interpreter and translator for all technical matters to the British Military Government of Braunschweig;

Approximately two years: manager of a medium size firm producing electro-medical devices, in particular ultra-short-wave therapy devices and supersonic frequency generators for physicians and hospitals.

DF 241, Part II

Question 3: Names of persons known to you, their activity inside and outside the FA. Present address?

Forschungsamt Personalities. [Dr. KURTZBACH]

[Names of Office Chiefs are underscored twice - of Division Chiefs are underscored once.]

Forschungsamt:

SCHAPPER, Gottfried, Director

Hamburg-Blankensee, Gosslarstr. 23.

Office I:

ROSENHAHN, - (East Zone?)

Office II:

BERGGREN, Bruno

Schöppenstedt, Kapellenstr. 8

KEMPE

KUNSEMÜLLER

Dr. SCHUMANN

Bonn

Office III:

(BREUER)

(FLEISCHMANN)

HENKE

Office IV:

SCHROEDER

Holzminden, Fürstenbergstr. 4

PAETZEL

Berlin-Zehlendorf

WENZEL

Hirschzell bei Kaufbeuren

KRÖGER " " "

LEHR " " "

Office V:

SEIFERT, Walther

Stuckenborstel bei Bremen

Dr. MEIS (10)

THIELE-FREDERSDORF (11)

München, Mannheimerstr. 5

Dr. FOSS (11)

Stuttgart, Wunnensteinerstr. 23

Dr. v. ROM (11)

Wiessee

Dr. ECKHARD (11)

Stuttgart, Schwabstr. 126

Dr. GERSTMEYER (11)

Düsseldorf, Beethovenstr. 11

STEPPAT (11)

München

BRETZLER (11)

Starnberg

Dr. KLINGMÜLLER (11)

Stuttgart

Dr. SCHULZ (11)

STICHLING (11)

Bonn

Dr. HUSSMANN (11)

Baden-Baden ?

Walter HENTSCHEL (12)

Deggendorf? Lower Bavaria.

BRIESCHKE (12)

Dr. HILLIGARDT (12)

LANGENBUCHER (12)

RENTSCHLER (13)

Hamburg.

Office VI:

STABENOW, Fritz

Eutin?

Dr. HUPPERTZBERG

Braunschweig - Süd, Retemeyerstr. 2

Research Control Center:

POPP -

München

These statements can be amplified if necessary.

~~TOP SECRET~~

A R M E D F O R C E S S E C U R I T Y A G E N C Y

DF-241, Part III

54/51/TOPSEC/AFSA-14

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DF 241, Part III 54/51/TOPSEC/AFSA-14

THE "FORSCHUNGSAMT"

1. Attached is an Armed Forces Security Agency translation of further answers to questions submitted to former members of the Forschungsamt. (See Part I for questions.)

2. Part III contains Huppertsberg's answer to questions 7, 9 and 14 combined (purely from a T/A viewpoint), Kröger's answers to questions 8, 11, 12, 13 and Kurtzbach's answer to question 15. It should be noted that Dr. Kröger's answers to questions 6, 7, 10 and 14 will be found in a long treatise to be issued as DF-240.

3. Answers to other questions will follow.

Translated: R.W.P. 35 copies;

August 1951 52 pages

Distribution: Normal

DF-241, Part III

THE "FORSCHUNGSAMT"

Question 7: Message heading, beginning and ending.

Question 9: Call signs, frequencies; how often changed? When?

Question 14: Typical course of solution: FT, Code Table, Code; superencipherments.

Questions 7, 9 and 14 overlap to such an extent that they may well be answered collectively in order to give some insight into the entire field. Furthermore considerable acquaintance with the entire effort of and with the cooperation between all divisions of the Agency is necessary to get a picture of the practical solution of this problem.

The task as a whole was so tremendously difficult because throughout the world, or even just in Europe and the Near East - which virtually belongs to Europe, there was a very great number of radio links belonging to individual state authorities; army, navy and air fleet units of the various countries; numerous diplomatic special services; espionage and sabotage organizations of the Allies; governments in exile and their partisan organizations; religious and purely private organizations, as well as arms smugglers and swindlers.

Only the big international links for public communication were included in the Bern List (CCIT) with call signs and frequencies and only these retained their call signs and frequencies - at least for considerable periods - and publicly announced intended changes. These links used international Q and Z signals to which were added numerous other procedure signs, e.g. ga = go ahead; msg = message; nil etc.

For internal lines some countries made considerable use of special national letter groups in service messages.

The same thing held true of the armed services of the various countries, which in many cases, e.g. in Germany, handled their traffic so that it was possible to recognize the country and possibly the branch of the armed forces by the characteristic manner of developing traffic, but so that procedure signs and operational traffic were avoided as far as possible in order to veil traffic connections to a great extent.

Call signs and frequencies in these cases were always changed daily, sometimes even oftener, or when new situations suddenly arose.

A complete survey of enemy traffic links was almost always assured on the basis of known geographic conditions of transmission by using D/F, by exact knowledge of the manner in which the several services developed traffic, by observing peculiarities due to the transmitters used, and not least of all by an exact acquaintance with the "fist" of the operator. However, this was only possible if at the receiving instrument the same personnel always received the same traffic, took exact notes on all peculiarities and transmitted these to the central control station and if this in turn arranged all these observed characteristics according to the services concerned and forward them as quickly as possible to all the B-Stations.

For this reason intercept control and evaluation had to have a central organization in Division 4.

The individual fields, which were more or less complete in themselves, were designated in the Agency as "complexes". That this may be better understood, a few random examples may be given:

Complex Economic Traffic of the British Empire;

Complex Traffic of Yugoslav Government in Exile, direction southeast;

Complex British Secret Service - Balkans, - Near East - Egypt, Nets 3 and 4;

Complex Greek - Armenian arms smuggling;

Complex U.S. Navy - Mediterranean etc. etc.

It is estimated that there were some 800 such complexes, but by no means could all of them be regularly intercepted because of dearth of personnel and equipment, some were not monitored because they were not considered of vital interest.

It was the task of the search ranging at the B-Station to record precisely all stations belonging to a complex on survey charts, to enter call signs, frequencies, frequency and time of change, location, abbreviations used, form of the messages (e.g. 4-letter groups or 6-digit groups), type of message heading, type of confirmation of receipt, traffic density, technical peculiarities of the transmitter, personal peculiarities of the operator, propagation conditions in connection with the time of day and season, etc. and to report these data in operations reports to Division 4.

From the operations reports thus gathered Division 4 compiled the so-called "radio operations books" which were arranged by complexes and gave all these details for each complex. These were issued to all B-Stations and to the working sections of the Agency.

Division 4 determined, upon instructions from Office V, which complexes or which links should be worked on by which B-Station and which complexes would be turned over to other agencies (e.g. Armed Forces Radio Defense (OKW/Abw), Armed Forces Cryptologic Agency (OKW/Chi), Army, Navy, Air Force, Police) for monitoring and processing.

At the B-Station the head passed the assignments to the area heads appointed by him; they handled the complex assigned, using their operators and their own initiative. The area head kept his crew together in order as far as possible to have the same operators copy the same enemy stations so as to remain "in personal contact" with the operator at the sending station.

The area head was then able to supplement the radio operations books as time went on on the basis of the traffic.

It is essential that a heading stamp be used on each intercepted message in which the operator enters:

Call sign of the sending station;

Call sign of the receiving station;

Frequency;

Date and clock time of interception;

Complex number and

Name of the B-operator

because these data were important for the subsequent processing and possibly for the choice of the key.

In Division 5 (Sorting) all incoming traffic was entered in the Message Number Control List insofar as the message heading bore a serial message number assigned by the sender. In this way it was possible to tell how many of the messages dispatched had been received and whether the messages had gone through normal channels or taken a circuituous route.

The message headings were different in practically all the complexes.

In almost all the complexes they contained:

Day and clock time of filing;

Number of words or letters;

Priority notation;

For many complexes they also contained:

From whom to whom;

Routing instructions;

Notation of delays;

Hints as to the type of encipherment,

With many complexes these last notations were enciphered within the message itself and therefore could not be used for sorting.

Therefore the message heading was not merely of decisive importance for sorting but, at least in some cases, gave a knowledge of the sender and receiver and possibly hints as to the importance or urgency of processing and forwarding the message. For sorting, i.e. for the distribution of the material, the most important factor was the stamp of the B-operator which showed the complex, while the question whether the message should go to

Office V or Office IV was decided by the fact that the message was in clear or was enciphered.

The message text was of no importance or interest for the work of Division 5 (Sorting). According to instructions to the personnel it was not to be read and because of the quantity of traffic received it could hardly be read due to lack of time.

Thus the message beginning and message ending were of no practical significance for the activity of Division 5.

Question Number 8: Who used the different systems? When? For what purpose?

The following compilation of the cryptographic systems used by the several countries can make no claim to being even approximately complete and comprehensive because these statements are based solely on my recollection of matters which, in part, extend back over a considerable period of time. No written notes are available and it was not possible to confer with the several experts dealing with individual countries. As a rule no attempt has been made to fix the time of use because any statements on this point would necessarily be too uncertain and general to be of value. The data included cover only the period between 1935 and 1945 and only diplomatic systems.

Abysinnia: 4 - letter code in the French language.

Egypt: 5 - digit code with 81 different substitution table encipherments.

Belgium: 4 - letter one part code with the group structure

k	v	k	v	= 10,000 groups
50	5	20	5	

Used at first as plain code, later enciphered with changing 2-letter substitution tables. The change of substitution tables occurred at gradually diminishing time intervals. Since the basic code had no variants and had been almost completely broken, it was usually possible to solve the substitution tables with a small volume of traffic.

Also a special colonial system which was not worked on.

China: A multiplicity of letter systems, generally 3-letter and generally with easily solved encipherments which could usually be reduced to one another. The traffic was monitored for only a short time and was not worked on.

Finland: Simple transposition with the most varied matrix forms.

Hagelin Cipher Machine Model 36.

The low degree of security of this model was known.

Consequently the cylinder of the machine was set by hand at short intervals determined by the indicator group so that its period was interrupted a number of times.

Solution of such messages was possible only in exceptional cases, e.g. when compromised texts were available.

France: Three to six and even more 4-digit two part codes were always in use simultaneously and they showed numerous variants for frequent words. Particular codes were preferred for special topics and special links. There was also a 4-letter code for consular traffic. Codes were replaced frequently.

In addition, for messages of a secret nature a special 4-digit code was used in connection with an extremely large number of 2-digit substitution tables and in connection with a simple transposition in three different phases. Below the groups are designated by the digits 1234 while the pairs of the substitution tables are tied by lines:

a) 12341 23412 34123 41234

b) 12341 23412 34123 41234

c) 12341 23412 34123 41234

Although the traffic was monitored for years each substitution table in a particular phase was used only 5 times at most. Inasmuch as the basic code was not known no reduction was possible.

Shortly before the war a new system appeared: a 4-digit code with a daily changing reencipherment by substitution table. Solution was not possible.

In addition many colonial systems were used:

A 5-letter one-part code in all the colonies.

A 4-letter one part code in Indo-China.

One or several 5-digit codes with many different (5-place?) additive numbers, which varied according to the link. Not worked on.

Key book and various other systems. Not worked on.

De Gaulle Government: A 5-digit code combined with simple transposition. Not solved.

Great Britain: A 5-digit code enciphered with a 40,000 digit additive. Starting points were designated by indicator groups.

Frequent change of additive.

Also a number of good and less-good systems which I do not recall.

Commonwealth States: As a rule had only the less-good systems of the mother country available.

Italy: 4-digit codes enciphered with rather long additives which, however, were used more than once.

Codes and additives changed at rather long intervals but as a rule only the code or the additive was changed at one time. Solution caused no difficulty.

Japan: Japanese cipher machine which is described in another place.

Simple transposition.

Transposition with grille. Solution simple until 1941, then progressively more difficult.

Netherlands: 4-digit one-part code; same code also used as 4-letter code. At first used unenciphered, later with an additive of limited length. Always easily solved.

Poland: 4-digit code enciphered with additive. Additive arranged in tables and taken out with various phases. Could be solved because the additive rarely changed.

Switzerland: Ten random substitution alphabets (Springcäsars)* which are used in regularly occurring sequence to encipher 5 letters of plain text, i.e. one group of secret text in each case. The starting alphabet is indicated by indicator letters.

10 random substitution alphabets (Springcäsars) which are used in arbitrary sequence to encipher 4 letters of plain text. As fifth element of the cipher group appears in each case the proper indicator letter of the Springcäsar which occupies progressively the first to the fifth position of the cipher group.

A code with 3- and 4-digit groups. A small code. 1-part. One code each in German and French. The 1- and 2-digit page numbers are enciphered with 100 different page substitution tables. In this encipherment 1-digit page numbers may be replaced by 2-digit numbers and vice versa. Codes and substitution tables were replaced several times.

Enigma Cipher Machine Type K. The use of indicator groups in the course of the years was as follows:

a) 4-place indicator group in clear corresponding to the window setting;

b) For each day of the week a fixed message key, which no longer appears as indicator group;

c) Indicator groups enciphered on the Enigma after the German fashion.

* Translator's note: For an explanation of this term see DF-240, I A 7.

At first the wheel sequence was constant for relatively long periods. A change was announced in a telegram enciphered on the Enigma. Later the wheel order changed weekly following a secret list. Finally the wheel order changed from message to message corresponding to the message number on each link, hence the same wheel order for the same message number in both directions on a link.

3-letter codes with transposition within the group and encipherment tables.

In commercial traffic (Interessenverkehr)* :

One 4-letter code each for French, German and English. Each group has three meanings:

1) word, 2) verb, 3) spelling group. Each of these types of meaning is arranged in alphabetic order. Special enciphering regulations, switch groups; punctuation marks, etc. on a special page.

In commercial traffic: One 4-letter code each for French, English and German with 3 meanings to each group but the meanings are not arranged alphabetically.

A 4-letter code with variants and a large number of switch groups which were used to a large extent to avoid parallel passages.

Spain: Several 4-digit codes which were enciphered by different additives according to the link. For minor links there were ten different additive numbers consisting of 100 4-digit groups each. In place of message numbers 100 4-place indicators were used standing in the first to seventh position in the cipher text.

* Interessenverkehr, probably means traffic sent on behalf of commercial interests.

When the unit digit of the message number is the same the encipherment number is also the same. On major links there were 50 different additive numbers comprising 120 4-digit groups each.

Instead of message numbers there were again 100 4-place indicator groups. The same encipherment table was used for message numbers 01/51, 02/52, 03/53 etc. could be solved.

Another system, which was not worked on, where the indicator group always repeated the group count of the previous telegram.

Czechoslovakia: Plaintext is enciphered with Tritheim tables. The order of the columns is determined by striking the keys wildly in totally random order, only two copies are prepared. These sheets are laid face down in the same order on pasteboard backing of the same size and are given identical indicator groups on the back.

When a specified number of sheets has been prepared, they are sewn to the pasteboard backing around the edge and the ends of the thread are sealed on the pasteboard. This assures that the cipher text will not be accessible until the top most sheet has been torn off so that it is certain that the key text has not become known to any third person before it is used by the encipherer or decipherer. There was also a strict regulation to destroy the cipher material immediately after encipherment or decipherment.

Hungary: 5-digit code in connection with a large number of additive numbers. As a rule an additive number corresponding to the message length is picked out and used only once. In rare

cases the same additive is repeated within a telegram. Could not be solved.

Turkey: Several 4-digit codes which were generally used with various 4-digit additives. As a rule the same additive number and the same basic code are used in the same month of each quarter year. Easily solved.

Vatican: 3-letter codes with encipherment of tables. Later also with transposition [within the group].

United States: 5-letter 2-part code.

5-letter code with systematic group structure kvkvk; only ten consonants in the first and third position; the remaining ten consonants serve as substitute letters. Enciphered with various one and two place substitution tables. Encipherment in various rhythms so that the first, third, and fifth element is enciphered singly. Each substitution table is designated by several indicator groups. When the substitution table changes within the telegram the new indicator group was at first enciphered with the preceeding substitution table. Later the indicators appeared only in clear which made solution more difficult. Several changes of code and substitution tables.

Hagelin Cipher Machine. Message setting is transmitted by enciphering the letters of the indicator group.

Strip system with rows of 30 elements, generally enciphered by half rows of 15 elements. Generally 50 strips and a new strip sequence daily. Later the width of the rows varied.

Various other systems not analyzed.

Balkan States: Usually used easy encipherments which I do not recall. Were read currently without great difficulty.

South American States: I do not remember the individual systems in the several states. All could be read. Mostly 5-place codes. Either not enciphered or with the simple encipherment. In the smaller states sometimes only simple substitutions.

Question Number 11: What printed forms were available? How used?

For statistical study and evaluation of the cryptographic material to be worked on there were about a dozen different forms always available. Along with these printed forms normal cross-section paper with squares of 5, 6, and 10 mm was used for cipher tasks. Moreover special forms were printed for various letter codes and other special tasks.

In Appendix 11, sheets 1 - 11, are shown the forms constantly in stock; they were used as follows:

Form 11, sheet 1, for dinome counts (chain counts, displacement counts, group counts, scorings etc.), where the only things noted on the form are the indices for pages and lines or the score marks for frequency counts; also for minor number counts running to three or more places, in which case the third, and the following numerical values are first entered in the cells, followed by a slash and the page or line index in the case of numerical values, or followed directly without a slash in the case of letters. Moreover this form could be used advantageously for dinome substitution tables.

Form 11, sheet 2, was printed on both sides of double sheets so that when laid out flat 12 squares could be seen at the same time. The single square was used for dinome frequencies, 10 squares on the double sheet for trinome frequencies. Moreover the form could be used for a trinome substitution table, insofar as the tabular form was not preferred.

Form 11, sheet 3, was likewise printed on both sides of double sheets. It served primarily in book form for working on codes with 3 or 4 digits or with groups of different length, where the page numbers were entered at the head of the form. At the right of the line numbers stood the indices, whereby the telegrams as a rule were given consecutive numbers and their lines were designated by the letters a to z, a' to z' in case there were more than 26 lines, etc. At the left of the line numbers interpretations were entered

in pencil. As soon as it was certain that any other interpretation was out of the question, these interpretations were entered in ink. After meanings were entered in ink the indices were omitted.

Form 11, sheet 4, likewise printed on both sides of double sheets, was used in much the same way as form 11, sheet 3, but preferably for alphabetic [one-part] 4- or 5-digit codes, since in general these require less space for statistical purposes.

Form 11, sheet 5 (printed on both sides of double sheets), could be used like form 11, sheet 4. It was preferred for the second copy of codes and for the production of difference catalogues.

Form 11, sheet 6, parts 1 and 2, was printed on one side of double sheets for letter counts covering from 2 to 5 letters, e.g. studies of indicator groups, studies of the structure of code groups, counts of short letter texts, etc. Moreover it is very well suited for setting up digraphic substitution tables.

Form 11, sheet 7, printed as 4-pages on a double sheet and also produced with only two columns instead of the four shown here, may be used for statistical counts of substitutions (Cäsaren, Spaltencäsaren) or chain counts and for counts of two or more letters, possibly entering in the heading of the different columns two or more letters representing page values.

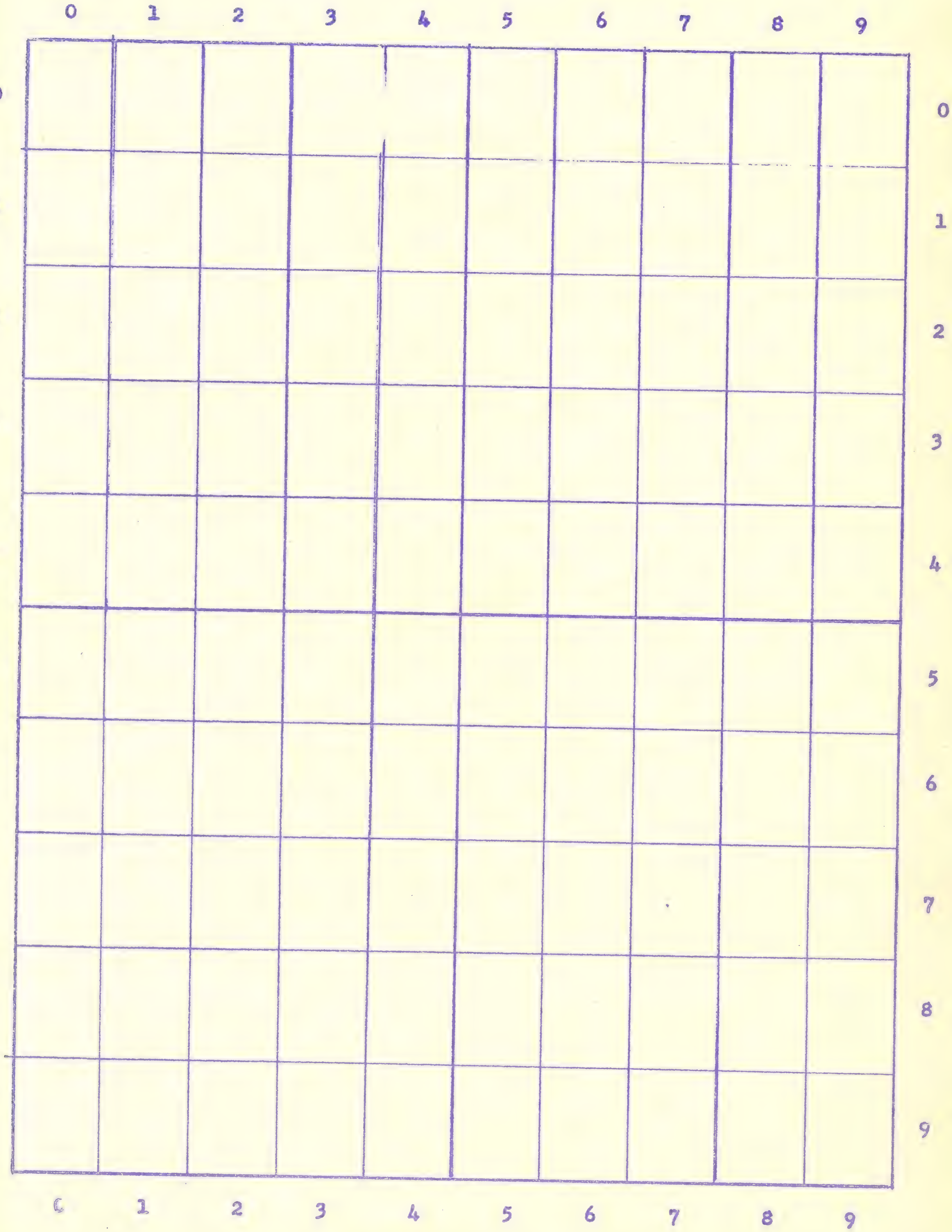
Form 11, sheets 8 and 9, are primarily used for counts of letter codes where the group structure shows an alternation of vowel and consonant and runs to several places. The two forms differ through the fact that sheet 8 contains only the 5 vowels a e i o u with 20 consonants (omitting j), while sheet 9 has y as the 6th vowel and j as additional consonant. By entering headings of from one to three letters it is possible to make statistical studies of code groups running up to five places.

Form 11, sheet 10, is similar to sheets 8 and 9 in structure and use. It is used by preference whenever it is desired to arrange the groups in the sequence ba be bi bo bu, ca ce ci co cu etc. instead of in the

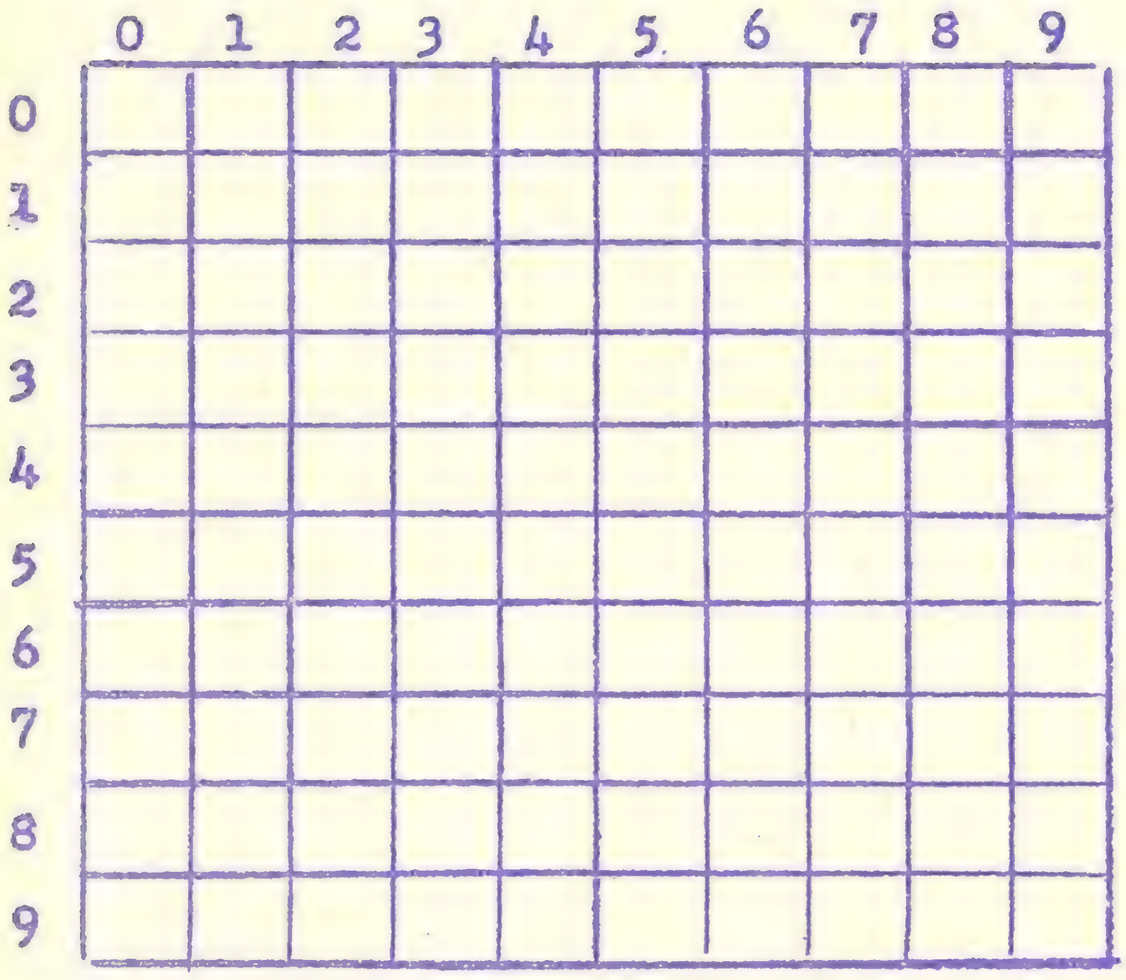
sequence ab ac ad af etc. (e.g. for code groups in the decode order) or for similar reasons.

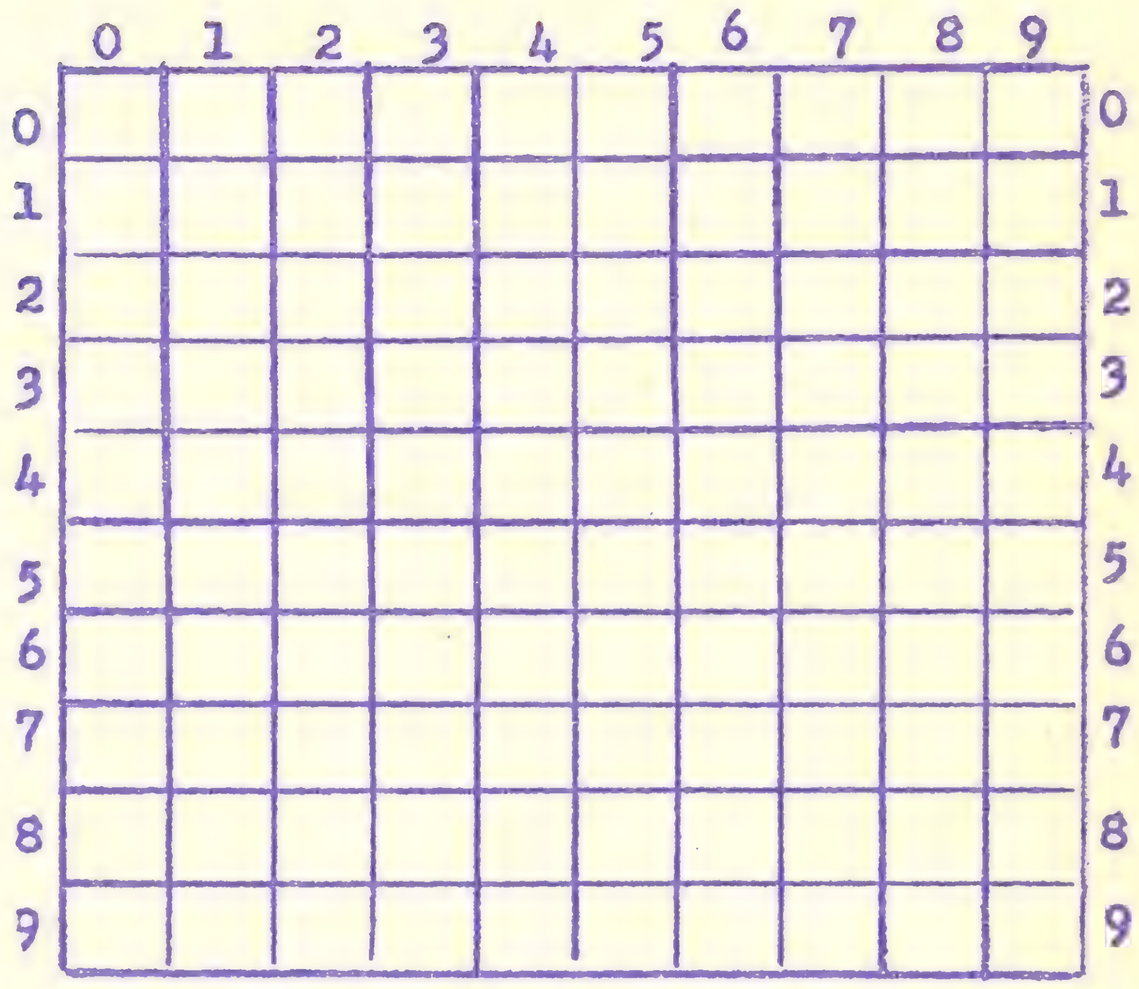
Form 11, sheet 11, Parts 1 and 2, contains like form 11, sheet 6, all two letter combinations but, due to the arrangement on 4 pages instead of two, affords more room for statistical purposes. It can be used for studies of all kinds, in particular for studies of the structure of code groups.

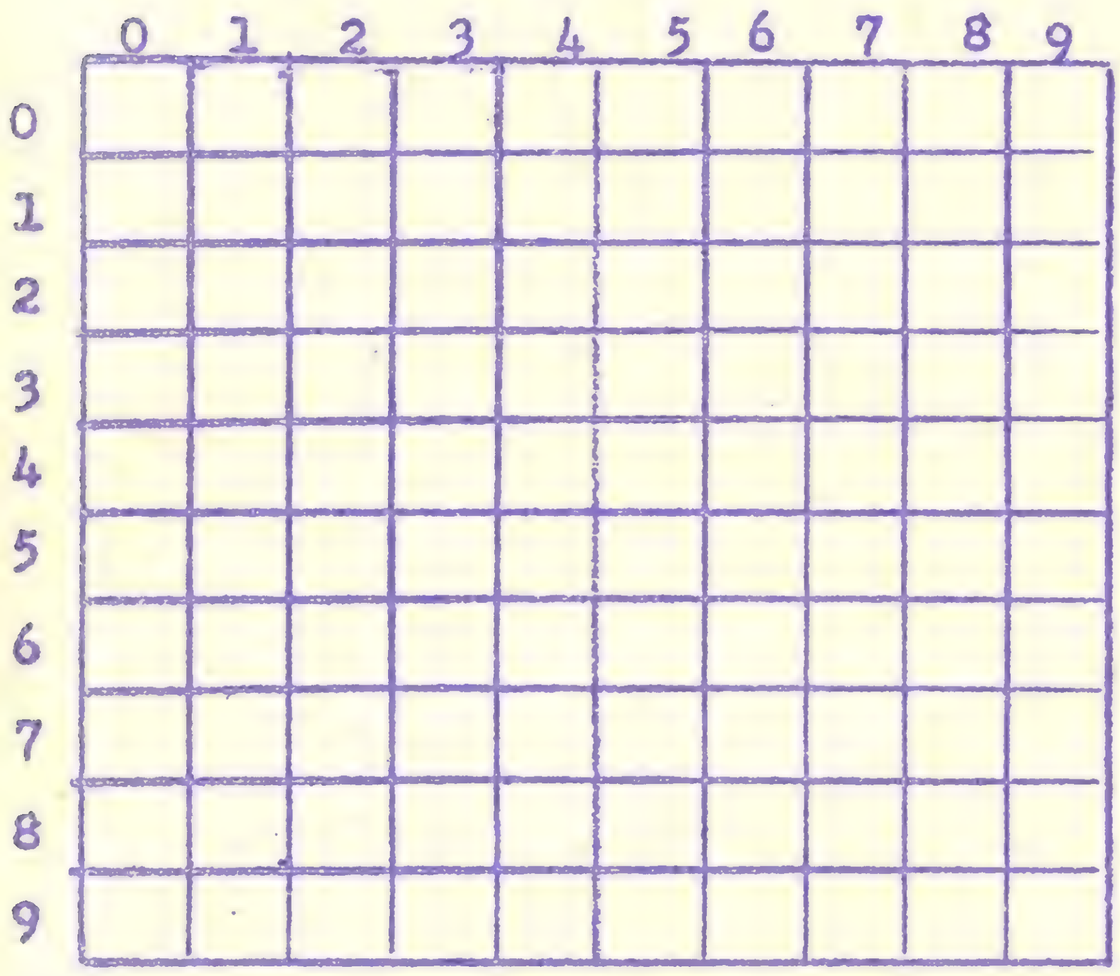
Appendix to #11, Sheet 1

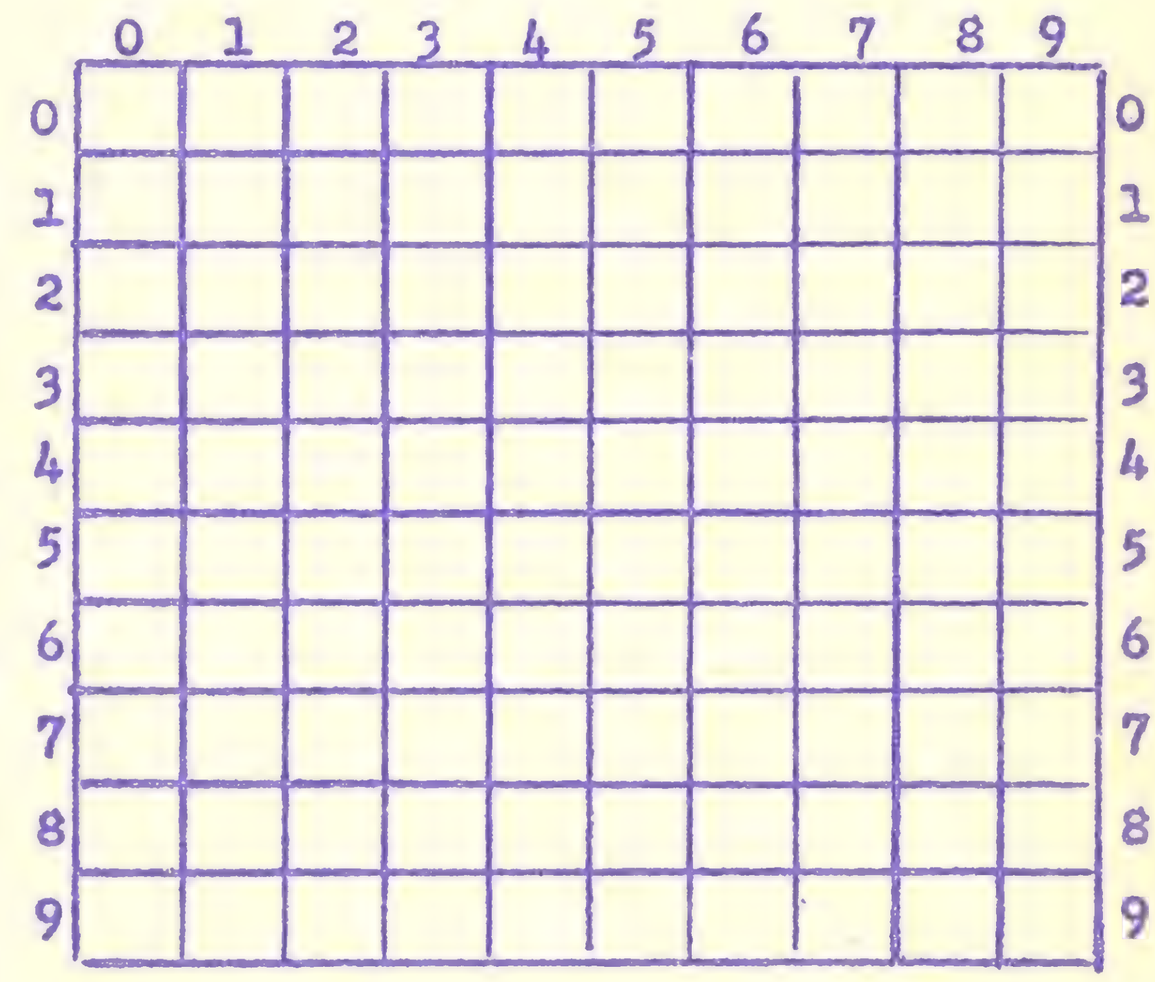


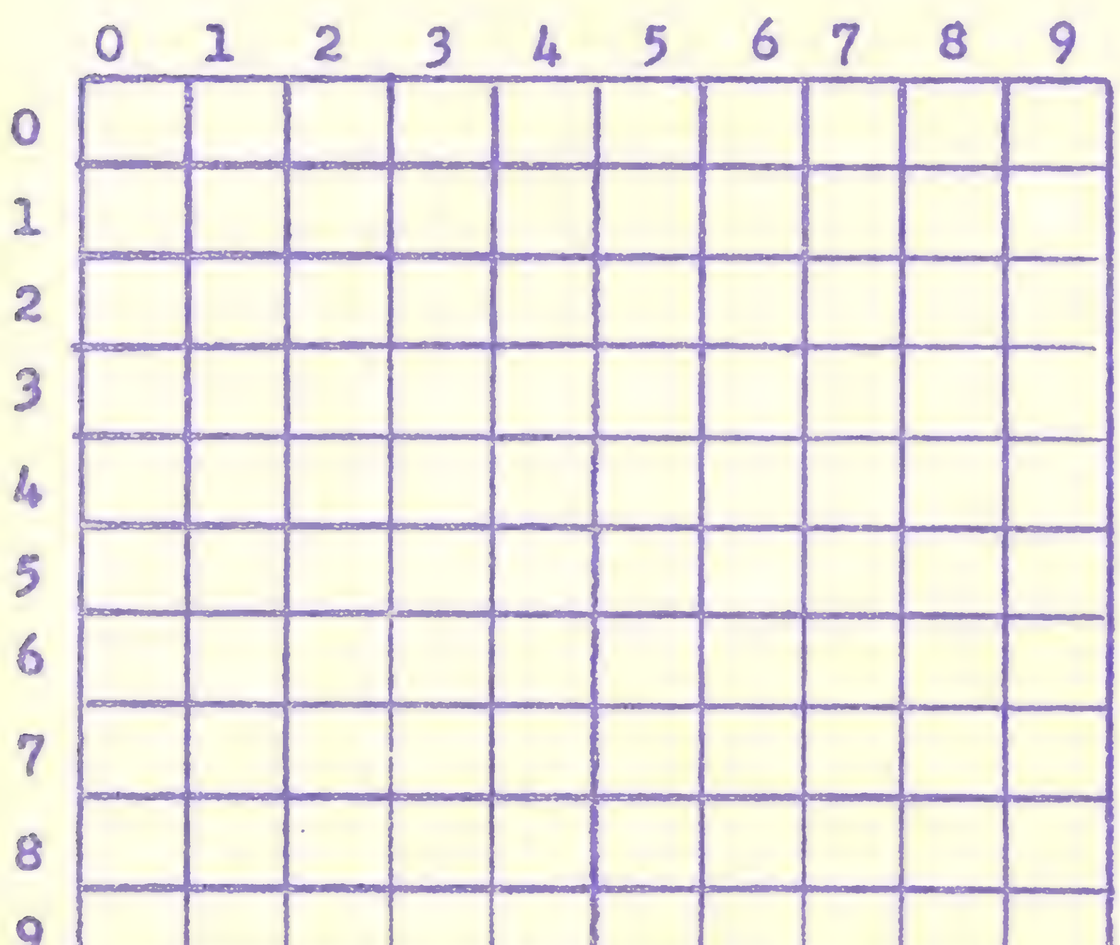
Supplement to #11, Sheet 2

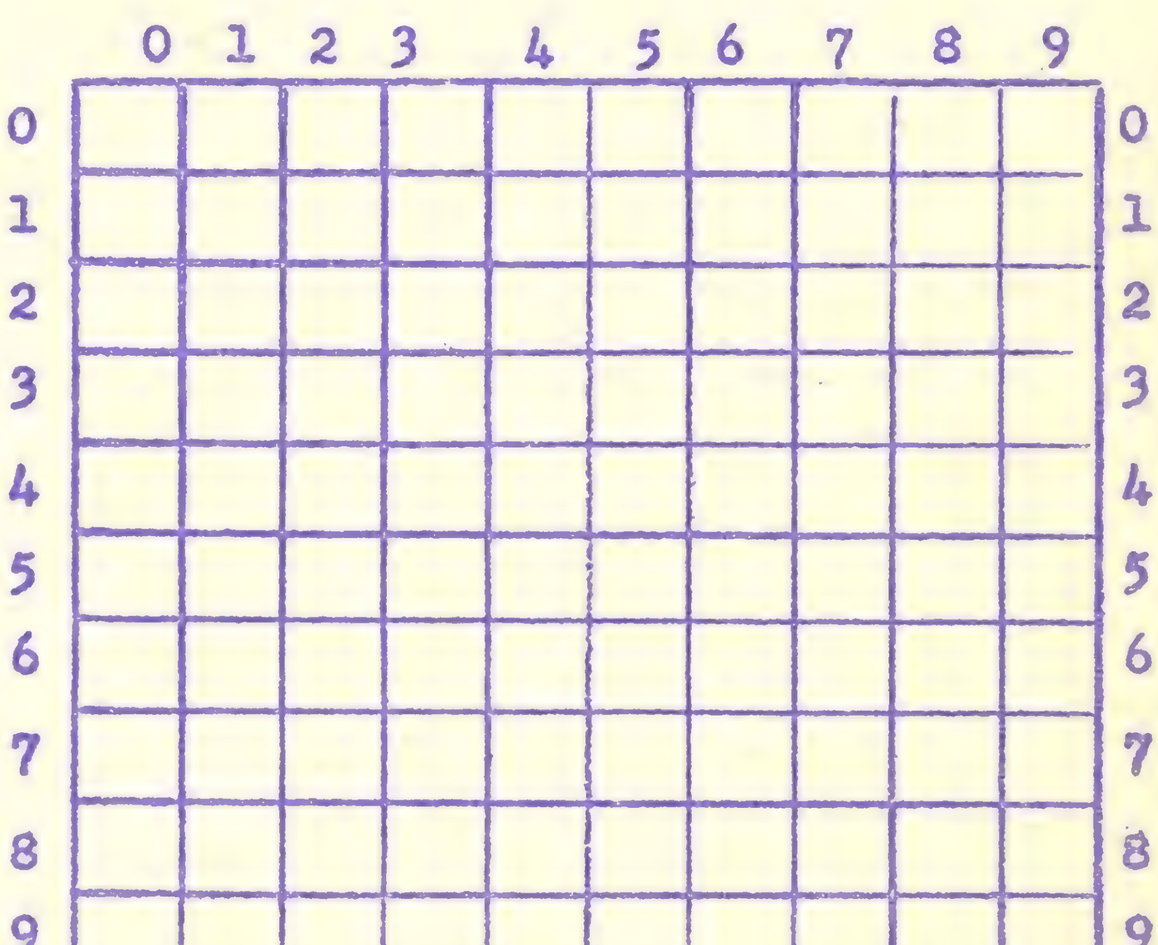












Back of sheet has the same ruling but is numbered 50 to 99

Appendix to # 11, Sheet 3

Front

00	25
01	26
02	27
03	28
04	29
05	30
06	31
07	32
08	33
09	34
10	35
11	36
12	37
13	38
14	39
15	40
16	41
17	42
18	43
19	44
20	45
21	46
22	47
23	48
24	49

Appendix to # 11, Sheet 4
(abbreviated)

	00				50		
	01				51		
	02				52		
	03				53		
	04				54		
	46				96		
	47				97		
	48				98		
	49				99		

Appendix to # 11, Sheet 5
(abbreviated)

00	50	00	50
01	51	01	51
02	52	02	52
03	53	03	53
04	54	04	54
45			
46	96	46	96
47	97	47	97
48	98	48	98
49	99	49	99

Appendix to # 11, Sheet 6
(abbreviated)

Left half = columns A-M
Right half = columns N-Z
26 letter alphabet

	A	B	C	D	E	⟶	V	W	X	Y	Z	
A												A
B												B
C												C
D												D
E												E
↓												
V												V
W												W
X												X
Y												Y
Z												Z
	A	B	C	D	E		V	W	X	Y	Z	

Appendix to # 11, Sheet 7
(abbreviated)

a	a	a	a
b	b	b	b
c	c	c	c
↓			
x	x	x	x
y	y	y	y
z	z	z	z

Appendix to # 11, Sheet 8.

a	e	i	o	u
b	b	b	b	b
c	c	c	c	c
d	d	d	d	d
f	f	f	f	f
g	g	g	g	g
h	h	h	h	h
k	k	k	k	k
l	l	l	l	l
m	m	m	m	m
n	n	n	n	n
p	p	p	p	p
q	q	q	q	q
r	r	r	r	r
s	s	s	s	s
t	t	t	t	t
v	v	v	v	v
w	w	w	w	w
x	x	x	x	x
y	y	y	y	y
z	z	z	z	z

(j omitted; y = consonant)
Two such blocks to a sheet.

Appendix to # 11, Sheet 9,

a	e	i	o	u	y
b	b	b	b	b	b
c	c	c	c	c	c
d	d	d	d	d	d
f	f	f	f	f	f
g	g	g	g	g	g
h	h	h	h	h	h
j	j	j	j	j	j
k	k	k	k	k	k
l	l	l	l	l	l
m	m	m	m	m	m
n	n	n	n	n	n
p	p	p	p	p	p
q	q	q	q	q	q
r	r	r	r	r	r
s	s	s	s	s	s
t	t	t	t	t	t
v	v	v	v	v	v
w	w	w	w	w	w
x	x	x	x	x	x
z	z	z	z	z	z

(y = vowel, j included)
Two such blocks to a sheet.

Appendix to # 11, Sheet 10.

ba	pa
be	pe
bi	pi
bo	po
bu	pu
ca	qa
ce	qe
ci	qi
co	qo
cu	qu
da	ra
de	re
di	ri
do	ro
du	ru
fa	sa
fe	se
fi	si
fo	so
fu	su
ga	ta
ge	te
gi	ti
go	to
gu	tu
ha	va
he	ve
hi	vi
ho	vo
hu	vu
ka	wa
ke	we
ki	wi
ko	wo
ku	wu
la	xa
le	xe
li	xi
lo	xo
lu	xu
ma	ya
me	ye
mi	yi
mo	yo
mu	yu
na	za
ne	ze
ni	zi
no	zo
nu	zu

Appendix to # 11, Sheet 11.
(Page 1)

A	bq	dg	ex
aa	br	dh	ey
ab	bs	di	ez
ac	bt	dj	F
ad	bu	dk	fa
ae	bv	dl	fb
af	bw	dm	fc
ag	bx	dn	fd
ah	by	do	fe
ai	bz	dp	ff
aj	C	dq	fg
ak	ca	dr	fh
al	cb	ds	fi
am	cc	dt	fj
an	cd	du	fk
ao	ce	dv	fl
ap	cf	dw	fm
aq	cg	dx	fn
ar	ch	dy	fo
as	ci	dz	fp
at	cj	E	fq
au	ck	ea	fr
av	cl	eb	fs
aw	cm	ec	ft
ax	cn	ed	fu
ay	co	ee	fv
az	cp	ef	fw
B	cq	eg	fx
ba	cr	eh	fy
bb	cs	ei	fz
bc	ct	ej	G
bd	cu	ek	ga
be	cv	el	gb
bf	cw	em	gc
bg	cx	en	gd
bh	cy	eo	ge
bi	cz	ep	gf
bj	D	eq	gg
bk	da	er	gh
bl	db	es	gi
bm	dc	et	gj
bn	dd	eu	gk
bo	de	ev	gl
bp	df	ew	gm

Page 2 is ruled the same and comprises : gn to mz
Page 3 " " " " " " : N to tm
Page 4 " " " " " " ; tn to zz (plus 1 blank)

Question Number 12: What devices were available for cryptanalysis?
Purpose? Description?

In the Forschungsamt the cryptanalytic office had only Hollerith machines available as technical aids, the extent and use of this equipment has been described elsewhere. On the other hand in OKW there was a special device, the so-called "parallel passage seeker", which may be worth describing.

The cipher text to be studied was punched on two tapes, the first element being omitted from the second tape. These two tapes had the ends joined so that two endless tapes resulted which were introduced into the device. The second tape was so set with relation to the first that to the first element of the cipher text the 2nd, 3rd, 4th, etc. were equated successively. The displacement of the two tapes could also be with skips when desired so that to the first element of the first tape the 6th, 11th, 16th, 21st element or the 11th, 21st, 31st, or the 41st, 81st, 121st element of the second would be equated if, let us say, the parallel passages of a 5-place code were to be discovered or if the study could be made sectionally with text sections of definite lengths as was necessary with the American strip system in order to get together texts belonging to the same row levels.

The length of the cipher text to be studied could then be set at will up to a maximum of 120 (?) elements. By simultaneous scanning of the two strips in the length set the device could determine the number of agreeing elements at each setting of the strips with respect to one another. The results was recorded by the device for the different settings of the two cipher texts in the form of a curve. From the height of the curve the number of coinciding elements could be read off. The study could embrace all five punched positions simultaneously, so that the cipher text as such was investigated, or only one specific punch row so that the impulses, of which the 5 hole alphabet was composed, could be studied individually.

The parallel passage seeker could therefore be used as follows:

1) To pick out actual parallel passages, in which case the minimum length of the parallel passages to be recorded by the machine could be fixed according to the system.
2) For counting the number of coinciding single elements in sections of text of a specified, settable length.
3) For determining periods of the cipher text or of specific punch levels.

In these last two tasks lay the principle significance of the device because studies of this kind could not be carried out satisfactorily either by a count of the cipher text nor by transfer to Hollerith cards.

For instance, if a plain text were made the subject of a study by this machine in a length of 100 elements each, then in all positions of the two tapes with respect to one another a certain constant percentage of coinciding letters should be expected. But if a cipher text of 200 letters has the first 100 letters enciphered by a different alphabet than is used for the second 100 letters, naturally the expected number of coinciding letters is highest where the investigation deals with portions of cipher text enciphered with the same substitution alphabet, and lowest when the sections of text studied were enciphered with different alphabets.

For instance, if ten alphabets (Springcäsaren) are used in systematic sequence at an interval of 5, then the curve produced by the device will have to show quite definite peaks at an interval of 50, if the study covers a sufficient width of text for all displacement stages. On the other hand if 10 alphabets are used in systematic sequence for encipherment, the curve must show definately recognizable peaks at an interval of 10.

A study of the individual punch levels may prove profitable for instance when checking cipher text produced by machines using the 5 unit system and it is a question of determining certain regularities in the several punch levels.

Since the parallel passage seeker can work automatically after the tapes are inserted and set and since the results are easily read from the plotted curve, this device represents a supplement to the mechanical equipment of a cryptanalytic unit which is all the more important because the work it performs can otherwise be accomplished only with great labor and expenditure of time.

Since I am not in a position to describe the technical construction of the device, I must limit myself to describing the tasks which could be performed by the machine.

Question Number 13: To what extent were Hollerith machines used? How?

With the founding of the Analytic Division 6 at the Forschungsamt the question arose, how the extensive statistical tasks generally necessary in the study and analysis of reenciphered systems could best be handled. If previously in the other divisions, which were primarily concerned with linguistic decryptions, reenciphered systems - which call for considerable expenditure of labor - had not been worked on because not enough personnel was available, this question became even more urgent in the Analytic Division since only such systems were turned over to it by the other divisions as called for a great expenditure of labor or where the work did not appear to promise results.

So a study was undertaken very quickly to see to what extent Hollerith machines could be employed for statistical work in cryptanalysis. The result proved so favorable that we could proceed immediately to the question of the amount of machinery necessary to satisfy the demands of the division.

Then the following machines were put into use:

3 completely automatic key punches.

1 verifier

2 sorters, one of them high-speed

1 reproducer

1 alphabetic tabulator

1 tabulator and accounting machine Type D 11.

It turned out later that, with long range planning, this set of machines was adequate to handle all jobs that came up.

As a rule the procedure in analytic studies was that in the case of completely unknown systems a card was punched for each cryptogram of the material under study which showed the date, link, group count, telegram number, indicator groups, as many groups as possible at the beginning of the cipher text and the last two or three cipher groups. With such cards it was possible to make all the studies of indicator groups and their

structure, frequency and type of the individual elements at individual positions in the message, the structure of the groups, repetitions in the message beginnings, similar beginnings, etc. and also to bring together messages of like length, messages going in the same direction or on the same link, etc. According to the results of this first investigation it could then be determined whether and in what fashion the cipher telegrams could be transferred at full length to cards and to what extent and in what manner the text of these cards would be recorded on other cards by the use of the reproducer.

Especially advantageous and time saving was the use of Hollerith machines in solving reencipherments by additive where the additive sequence was limited but nevertheless extensive, e.g. in the case of Great Britain, France, Spain, Italy and other countries. Using Hollerith machines it was possible first to pick out messages in the same key by means of genuine parallel passages, insofar as this could not be done earlier by recognizing the significance of the indicator groups. Then the D-11 machine could derive all least differences between the text groups which had thus been lined up in vertical columns and could record these least differences on new cards using a punch wired up in parallel, a job which the machine - on the basis of the wiring which was several times improved upon - was able to perform in a period of about one second for each difference, in spite of the elimination of the major and minor difference. These minor differences were tabulated in columns and then the reduction of the column to a relative basic code was undertaken. After the reduction of the first columns a multi-stage difference catalogue (e.g. stage 1: differences between frequent code groups, stage 2: differences between frequent and less frequent code groups, stage 3: differences between rare code groups) could be prepared from the reduced text groups as the final job of the Hollerith machine. With the aid of these, reductions were possible even when the depths were slight.

A second type of system, which could hardly have been solved in a reasonable time because of the amount of labor involved, was the American strip system as used in the American Air Force and in American diplomacy. Here it was possible to get together material in the same key on the basis of long repetition or of digraphs and trigraphs by using Hollerith machines, after which the work of linguistic solution could be attempted.

Another job in which Hollerith machines could give valuable aid is with texts enciphered by machine where it is possible to copy out the cipher text in the various least periods of the machine, corresponding to the individual parts which produce the complete period of the cipher machine, in order to study the resulting columns, corresponding to the periods, and to determine as far as possible the plus or minus value for each position of the least period and thus to solve the cipher machine as such. Hollerith machines are less suitable for determining the least periods of unknown machines.

Finally the use of Hollerith machines is advantageous for watching systems already analyzed, when it is a question of determining whether specific presuppositions, under which decryption is possible, have been satisfied, e.g. :

Messages of a definite minimum length,

Two messages in the same key,

Messages of the same length,

Attainment of a specified amount of traffic for each indicator group, for each day, or in all, etc.

In this case there was prepared for each enciphered message in the system under study a card with the requisite data and these cards were studied at definite time intervals according to accepted principles.

Furthermore Hollerith machines could be used to advantage for the production of cryptographic materials of all kinds. For instance, 3-digit substitution tables were prepared for encipherment and for decipherment in a very short time in a purely mechanical way. For this purpose 2 sets

of cards punched with the numbers 000 to 999 were used. One set was shuffled by machine or by hand and the numbers were transferred by use of the reproducers to the cards of the second sorted set. Then the substitution tables could be produced on the tabulator. In similar fashion encipherment numbers of every kind can be produced in relatively short order.

It is hardly necessary to state that in addition to these special jobs all other statistical studies of major extent, e.g. multiplace displacements ["brute force" techniques] for discovering repetitions in systems not yet analyzed, position counts [uniliteral, digraphic counts] etc. can be performed by Hollerith machines. On the contrary it is enough to mention the types which were not done by Hollerith, namely:

Counts of structurally similar parallel passages, such as occur when sliding components are involved, and counts of simple code text.
The first of these was not done by machine because no way was found of performing the work more easily than by hand; the second was not done by machine because purely practical considerations led us to regard the ordinary letter count as more advantageous.

Question 15: What were the VN's? Preparation? Distribution? How many copies? What did they contain besides decrypted text? Might any still be found? [Kurtzbach]

The VN's

The VN's (confidential reports) were the evaluated actual secret material of the Forschungsamt. For treating individual messages or compilations of messages as a VN it was necessary that either E- (decrypted) or Z= (telephone monitored) material be worked over therein.

The VN's were numbered serially. They were stamped "Top Secret". They also bore a reference to the paragraphs dealing with treason and the proper handling of the VN's. The paper of those copies which left the building was light brown, that of the copies remaining in the building was yellow. Brown and yellow VN's and the master copies from which they were reproduced were passed only against receipt both inside and outside the agency. Other offices or persons who received the VN's had to return them after a specified time. These returns and the copies which had become superfluous in the FA were destroyed in a shredding machine after careful checking of the serial numbers and the number of pages.

Aside from the brown and yellow VN's there were the "Secret Reports" reproduced on white paper in which less important sources were dealt with. They had their own serial numbers.

Basically the Director* decided whether the VN's should be issued on brown or white, in border line and doubtful cases the decision was made by the Chief of Office V.

The care with which the VN's was handled by all members of the FA and by recipients in other offices was such that in the eleven years during which

*Translator's note: On page 12 of DF 241, Part I it is stated that in general the Chief of the Division made this decision while the Chief of Office V although theoretically responsible for all VN's, merely determined the distribution of the most important reports and ruled on doubtful cases.

the agency existed only very few of the millions of single copies on "brown" or "yellow" were lost and these were not very important ones. In each case there followed an unsuccessful investigation which led to a warning to members of the FA and to serious representations in the case of outside offices.

In the matter of preparation there were three kinds of VN's:

1. Reproduction of intercept results either in whole or in part.

2. Resumes of the content of several sources.

3. A mixture of 1 and 2.

Below are some examples which correspond precisely to the form of the VN's although the content has been composed for the purpose:

VN Nr. 246378

"Top Secret!"

Date of interception

Visit of CIANO in Berlin planned

Foreign Ministry in Rome on (date of the radiogram) gave the Italian Ambassador in Berlin, ATTOLICO, the following instructions:

"Call on the German Minister for Foreign Affairs tomorrow and inquire whether my visit in Berlin in the second ... (FA: illegible. Probably "half of the month") would be agreeable. Tell him that I intend to meet early next month with S U N . . . (FA: probably the Spanish Foreign Minister SUNER) and that I deem it important to establish a . . . (FA: illegible; probably "common") line of action.

/s/ CIANO" (E) (=decrypted message)

VN Nr. 674538

"Top Secret!"

Date

FRANCOIS-PONCET:

"Paris reaction to Hitler's speech very bad."

On (date; if important also the clock time)

The French Ambassador FRANCOIS-PONCET, who has been in Paris (FA: Cf. VN. Nr. 674266 of ...) since (date), contacts the Councillor of Legation COULONDRE, in Berlin:

F.P. : "Good evening, my friend! Anything new?"

C.: "Well...I suppose you have read yesterday's speech".

F.P.: "Yes,...unfortunately...I have just been to see D. (FA: DALADIER?) What can one say? It is always the same thing.."

C.: "Of course. But the remarks on developments down there..that.."

F.P.: Interrupts: "Yes, Yes..This passage (FA: probably the following passage regarding the Spanish Civil War:.....) has been noted here. But the total impression here was very bad."

The Ambassador then inquired about the health of Attache Y who was ill and at the end remarked: "I think I shall be back in Berlin on the 25th."

(Z) (=intercepted phone call)

* * * * *

VN Nr 536279

"Top Secret!"

Date

On Italian-Abysinnian Tension

London counts on the beginning of hostilities soon.

The Turkish Ambassador in Washington, ERTEGÜN, reports on (date) to the Foreign Ministry in Ankara, that in the United States the latest speeches of the Duce and the sharpened tone of the Italian press have been followed with increasing criticism. The report goes on to say:

"As I learned today from ... (FA: illegible, probably "confidential") source, reports from London are at hand in the State Department, according to which people there regard the beginning of hostilities.... (FA: illegible; probably "as immediately impending"). Also in League of Nations circles... (FA: remainder illegible)!".

Probably connected with this is a message which the British Ambassador in Berlin, Sir Eric PHIPPS, received on (date) from an unknown party in the Foreign Office:

U: "Your report of yesterday (FA: not yet available here) aroused much interest here. Meanwhile, however, other things have been coming to a head. We must count any day on ... you understand!"

Ph.: "Yes..and what then?"

U. : Probably the measures provided for in such cases (FA: Sanctions of the League of Nations?) will be decided upon."

Ph.: "This probably will not stop those people (FA: in Rome?)."

K (E+Z)

Supplementing the foregoing examples it may be said:

1. It was a primary rule for the evaluation units that the reproduction of messages should be absolutely objective and without any attempt at coloring. Any change and any addition, no matter how unimportant or indisputable, had to be plainly marked as such. Heads of the section, branch and division in the evaluation unit checked every master sheet carefully in this respect; if there was the slightest deviation from this rule the master sheet was returned to the compiler for alteration or rewriting. This was rarely necessary because this basic rule became part and parcel of every worker.

2. In the evaluation units one special rule regarding the handling of Z-messages always elicited a smile: The word "telephone" was never to be employed; instead the form of composition was to give the effect of a

conversation overheard and copied. That this was not possible when the one partner was in London and the other in Athens made no difference, and so this "fig leaf camouflage" was never abolished.

Naturally it is impossible to give examples of the "syntheses", as a second form of treatment was called, from memory and without appropriate topical archive material. These actual "evaluations" were often very long: it was not unusual for them to run 100 pages and more. They were usually composed in such form that at the beginning an abstract was given running to a few pages, after which detailed documentary evidence was introduced. Employed for the purpose were E, Z, F (plain text radiogram), D (land line telegrams), P (press) and R (broadcast) sources. There were periodic and specific snytheses.

These syntheses were intended to combine in abstract all sources available in the FA on a given topic and for a definite period of time, in other words to produce the mosaic picture, often made up of tiny stones, which is usual in intelligence work. Below are some typical topics:

"Echo of the Speech by HITLER (RIBBENTROP etc.)"

"On the Sudeten Crisis."

"On the Duce's Visit"

"On the Munich Negotiations"

"On the Situation in the Market for Non-ferrous Metals"

"On Communist Propaganda in France".

"On the Status of English Coal Exports"

"On the Economic Situation in Russia."

"On the Relations between USA and Argentina."

and above all

"On Anglo-Saxon-Soviet Relations."

At the end of such VN's was a notation of the types of source employed; e.g. (K(E+Z+F+D+P+R) meaning "combined from decrypted material, intercepted telephone conversations, plain text radio, plain text land line messages, press and radio broadcasts."

In general the following rules were in effect for these syntheses:

a) Every word must be backed up by the sources.

b) Evaluation, deductions, to say nothing of prognoses, had to be held to a minimum (previous consultation with the head of the branch or division); furthermore it was necessary to show clearly how and why the compiler arrived at precisely this conclusion. During the early years of the FA evaluating syntheses were not written at all. The agency intended as a matter of principle to supply only objective and reliable bases for the use of others in arriving at an opinion, that is material for the use of the various ministries or other central offices with political, economic and other responsibilities and administrative powers. Moreover that is all it was supposed to do, according to the wish of skeptical recipients of the VN's. But when after some years there was no longer any doubt as to the value of the products of FA evaluation or as to the reliability of this method, many subscribers, primarily economic agencies, let it be known that they were interested in the opinion of the FA itself. Then there was a certain loosening up.

To the very end, however, there was no doubt that neither HITLER nor RIBBENTROP desired so much as a suggestion of "instruction". Of the many VN's, two or three a day and many more in times of crisis, which were supplied to the Chancellery, attention of SCHAUB, HITLER read barely one percent according to reports from SCHAUB's office. Even before the war, about the time of the conference in Munich, a remark by HITLER was reported back to the FA. "that he no longer wanted to see the pessimistic FA reports; they only made him unsure." The evaluation unit was all the more perturbed since at the time in question only literal, factual reports had been supplied

which, in compliance with regulations, had been provided with no comments.

Syntheses were prepared in the FA either at the request of a ministry or other agency or on its own initiative. This last case afforded the only tiny possibility of trying to influence to a mild degree the agencies handling political and economic affairs. For instance in the last month before the war began Division 11 on its own initiative compiled at intervals of only two or three weeks syntheses of all reports which could be interpreted in any way to indicate that the USA would this time enter a war on the side of Germany's opponents very much earlier than in World War I.

Genesis of a VN

Taking as a basis our example on page 36 we will describe the genesis of a VN:

All the basic materials, with the exception of the decrypts*, are sent from the "sorting", where all intercept results are collected as if into a funnel, by the internal tube service to the proper expert. An evaluator in Section 11 B 2 (Foreign affairs, European Branch, Italy) receives then the conversation of the British Ambassador in Berlin with London as copied down by telephone monitor X. The evaluator first calls the monitor and asks whether the name of the London partner could not be ascertained. The monitor says, no. At first there was interference and the voice was quite unknown; however, the switchboard of the Foreign Office had responded in the beginning. While this was going on, the Secretary of the Chief of Division 11 has received a tube carrier with 20 to 30 rolled-up decrypts and a receipt form showing the individual message numbers. This sequence of numbers is checked and the individual numbers are entered in the decrypt log of the division; the receipt is then returned to the sorting section. The division head now notes on the decrypts the branches for which they are destined and any instructions.

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*Translator's Note: See diagram, page 46.

The following notations were used:

B = give verbatim.

(B) = give full content but rewritten in indirect discourse.

Bv = give verbatim, but with other supplemental material.

b = give the content in much condensed form.

A = send to the Archives

No notation - put in the decrypt depository without processing.

So the report of the Turkish Ambassador goes with the notation "Bv" to the head of 11 B and from him to the section head of 11 B 2 and the expert, in each case against receipt.

The completed master sheet with the original decrypt and monitoring report then goes back by the same route to the division chief, who then determines the "distribution" on an attached form - insofar as the information does not come into account for the Chancellor's office or for GÖRING, which is not the case with a report like that on page 36 . In this case the division head makes a notation: "Foreign Office". The distribution of important messages is determined by the Chief of Office V. From the division chief the master sheet with the attachments goes to the reproduction unit of Division 10. There the master sheet is given its VN number. The number of copies "for the house" is always the same but the number of "brown" copies depends upon the specific distribution instructions. These arrangements were fixed with every subscriber. The documents now go to the "N-depository" where they are filed by numbers, each source by itself. If the number of a VN was known, no matter how far back it belongs, the basic documents could be produced in a few minutes. In the "N-Expedition" the shipments for the individual recipients were made up and forwarded by tube or FA courier. Each shipment was accompanied by a receipt form which had to be returned to the FA immediately.

The recipients of the VN's and the Distribution List

The question of which confidential information must or can go to whom, is often not easy to answer in any intelligence service ... in view of the rivalry, mutual mistrust and struggles for power among the leading agencies of the National Socialist regime it was sometimes more than difficult for a neutral intelligence agency like the FA.

The basic decision as to who should be provided at all and with approximately what information lay in GÖRING's hands. Sometimes individual offices or persons approached him directly; he then gave the FA corresponding instructions. If they applied to the FA, then the Chief of Office V sent an inquiry on to GÖRING. Generally he wrote in the margin of such inquiries broad decisions, the execution of which might prove difficult in practice. E.g.: "it is only to get material on Russia". Many reports contained at the same time information regarding Japan or England etc. Or: "only general economic information." Where did "general" stop? Or: "no decrypts" then many a synthesis had to be reworked. In general, however, his decisions were apt and such as might be expected. All reports of scandal or corruption involving prominent people were to be sent first to him and to him only. In some cases he ordered the material passed to other offices. All reports regarding the relations of GOEBBELS and Lida BAROVA were to be sent only to him. In cases of doubt he was to be asked whether he approved of the distribution of each individual report; for this purpose there were special forms. For about 90% of the VN's he gave the FA a free hand within the limits of his initial general directive.

Those persons in the ministry or other office who were permitted to handle and read the "brown sheets" was fixed precisely in collaboration with the minister. Each individual had to take a special oath. In the ministries usually only a few officials were authorized to see them in addition to the Minister and Secretary of State. The requirement of a receipt every time a VN changed hands was regarded as burdensome by the

subscribers, however, no concessions were made. It is true that in GÖRING's own place the VN's were the favorite reading of his valet.

The number of offices "entitled to receive" and consequently the number of individuals grew from year to year. By the end of the war there may have been some 70 offices with many hundreds of individuals. It is impossible to reconstruct an exact list of the offices from memory. Many of them were offices dealing with war economy and were supplied only with technical reports: coal, iron, etc. The rule was that each office or individual, e.g. TERBOVEN in Oslo, should receive only those reports which were necessary for the work. But the views of the FA and the subscriber often differed on this point! In this respect HIMMLER and the R.S.H.A. (Main Security Office) were the hardest to deal with since they considered themselves competent in all matters. Until the war broke out GÖRING's power was great enough to cover the FA when it refused these demands; from then on it became ever less, as became clearer from year to year - much to the sorrow of the FA - in GÖRING's decisions regarding distribution. (A detailed statement regarding the relations of the FA to HIMMLER and the R.S.H.A. and their development will be given in the answer to Question 26).

Among the recipients of the VN's were:

HITLER and the Chancery of the Reich

GÖRING

KÖRNER

All Ministries

O.K.W. (High Command of the Armed Forces)

O.K.H. (High Command of the Army)

O.K.M. (High Command of the Navy)

KEITEL

JODL

Abwehr (Counterintelligence)

Various military-economic agencies

RIBBENTROP's Bureau

ABBETZ

TERBOVEN

SEISS-INQUARDT (?)

HIMMLER

R.S.H.A. and individual state police offices

Directorate of the Four Year Plan

Numerous agencies of war economy

General STÜLPNAGEL - Paris

General v. FALKENHAUSEN-Brussels (?)

As has been said, this list is not complete, the number of reports supplied individual subscribers varied greatly. Those receiving the largest numbers were:

Ministry of Economics and subsidiary organizations.

Foreign Office

R.S.H.A

Abwehr

Ministry of Propaganda

Those receiving the top quality were:

HITLER

GÖRING

KÖRNER

RIBBENTROP

With so many subscribers and in view of the fact that many VN's touched at the same time on numerous political, economic and military problems, the correct distribution became a complicated matter. Furthermore less important reports were to go only to the experts of the ministry but not to the chief. So distribution involved hundreds of possible combinations. For instance,

a synthesis on bottle-necks in Soviet war production had to be distributed as follows:

GÖRING

RWiM (Ministery of Economics)

RIBBENTROP and Foreign Office

O.K.W. (High Command of the Armed Forces)

O.K.H. (High Command of the Army)

Luftwaffe

Abwehr

and certain military-economic agencies.

The number of copies of a VN might therefore be very large or very small, according to the distribution. As far as number of copies went, the smallest distribution list was:

KÖRNER - 1 brown and the usual yellow house copies for the archives and circulation.

In the case of large distributions, where one VN number went to as many as 10 offices some of which received 3,4,5, or 6 copies, 50 or more copies had to be prepared.

TOP SECRET

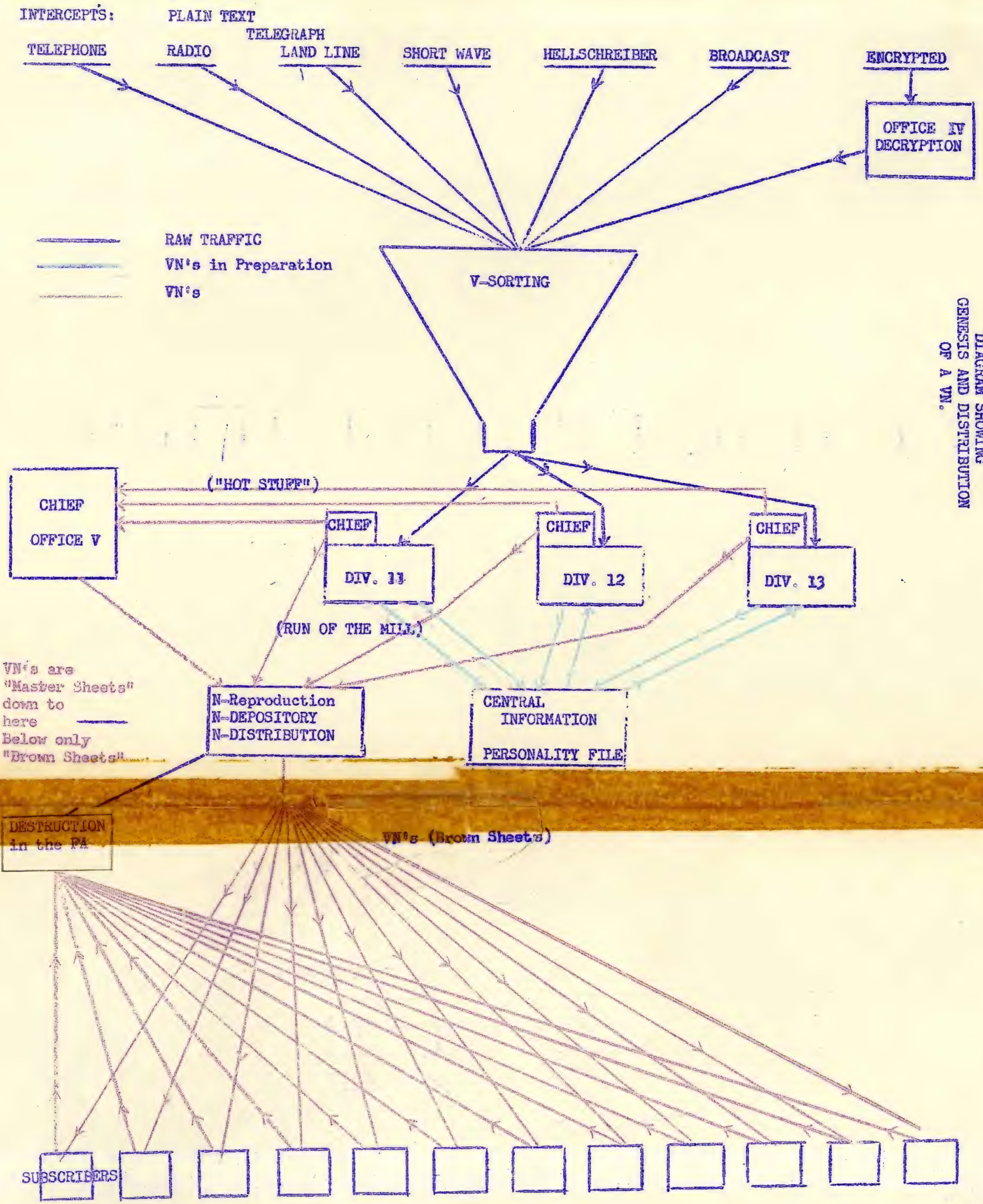

DIAGRAM SHOWING GENESIS AND DISTRIBUTION OF A VN.

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TOP SECRET

Differences between the VN's of
Divisions 11, 12 and 13

Any report on the VN's of the FA would be incomplete if nothing were said regarding the difference between the VN's of the three evaluation divisions. The differences in type of material and in interests and working methods of the subscribers led in the course of time to a certain difference in the evaluation itself.

Division 11 worked on all reports dealing with foreign countries aside from their economics and economic policy, as well as the echo of German foreign policy.

Division 12: Foreign and German economics.

Division 13: Security of the state and German internal policy.

Hence the principle subscribers for Division 13 were:

R.S.H.A.

Ministry of the Interior.

Counterintelligence

and to some extent the Ministry of Propaganda.

The bulk of the incoming material for Division 13 was supplied by the results of monitoring the telephones of individuals where this had been requested by the R.S.H.A. and Counterintelligence. The VN's of 13 were therefore chiefly complete or partial verbatim reproductions of telephone conversations, which hardly gave occasion for any evaluation in a strict sense. Moreover Counterintelligence and the R.S.H.A. only wanted as exact a transcript as possible. Occasionally a composite report on persons or circles under observation could be made. It was quite a different matter with foreign broadcast propaganda against Germany; here recognizable trends and changes therein were watched and presented in syntheses. But R-material was treated merely as "secret" and not as "top secret" and, if used alone, did not result in VN's.

Things were quite different in Division 12. The principle subscribers were the Ministry of Economics with its numersous subsidiary organizations and military offices dealing with war economy. Quantatively the principle source for 12 was the interception of commercial radiograms, including Russian internal traffic. This represented perhaps 75% of Division 12's material. While 13 received and worked over practically no decrypts, 12 may have gotten 3,000 or more a month. The monitoring of telephone conversations for 12 was very slight, aside from negotiations in connection with economic and commercial agreements insofar as these took place in Germany. In 12 a "B-treatment", that is an exact reproduction of a single basic document, was the exception. A combinatory actual evaluation of individual documents of categories E, F, and D - often in large numbers - in one VN was the rule. For Division 12 the otherwise strict regulations regarding handling and secrecy had to be loosened up gradually. If the frequently useful results were not merely to inform government offices but were to benefit the German economy itself, then the German mining industry, for instance, had to find out that in this or that country for this or that reason an increased demand for coal would become noticeable. Nevertheless the circle of those entitled to receive the "brown sheets" must not be expanded without limit. Therefore 12 was authorized to produce on "white" re-workings from all sources which were fed to further economic circles of the Ministry of Economics or its subsidiary organizations. These must not reveal the sources in any way, to be sure. The output of VN's and other reports by 12 was considerably larger during the war than that of 11 and 13.

In Division 11 the situation was entirely different again. Here precise figures regarding the amount and type of raw material could be given. During one month, the exact time I no longer recall, 11 handled 2,100 E's, 60,000 F's and D's and 19,000 Z's, also 14,000 foreign broadcasts of political or propaganda content, and 150 foreign newspapers and magazines. From these some 800 VN's were produced.

The principal subscriber for 11 was naturally the Foreign Office, but offices of the Military Command and the Ministry of Propaganda also received material. The principal source for the Division lay in the decrypts. The fact that the "big" Russian, American and English codes, like the Japanese, could not be solved by the cryptanalytic divisions made the work more difficult of course. To some extent this was compensated for by the solution of the codes of a number of other countries. In particular the fact that Turkish messages could be read was of great value. In order to carry on their very clever diplomatic game between the two camps until a clear military decision should result, the Turks had to try to get the best possible intelligence from all quarters. And they succeeded in this to a high degree. Their ambassadors in the capitals of both camps and in important neutral places obviously had at their disposal very good, fast working sources of information. This was true particularly in London, Washington, Moscow, Stockholm and also in Berlin. Since Ankara often radioed the excellent reports of ERTEGÜN (Washington) to the Turkish ambassador in London for his information, they also became known to the FA even though it was not possible to intercept his messages to Ankara. In any event it was possible to piece together from bits of diplomatic information from a number of the lesser countries a very useful picture of the intentions and views of the great powers whose messages could not be read.

The most important decrypts were of course reproduced verbatim. As was well known, the Foreign Office had a cryptanalytic section of its own, but this worked more slowly and produced less, moreover, it did not have available the excellent topical archive and the personality file of the Forschungsamt. These made possible supplemental remarks and references to events and connections which materially enhanced the intelligence value. For instance, if a short decrypted message reported that Czechoslovakia intended to recall Ambassador X in Y in the near future and to replace him by Z, the Forschungsamt could usually add notes giving: careers of the two

diplomats; statements of their party connections, political views and attitude toward foreign policy, above all their relations with Germany, Moscow and the West; any articles they had written and their relations with prominent personalities at home and abroad, etc. When a message announced the impending denunciation of an international agreement, its text was added as supplement.

The greatest demands on the evaluation of Division 11 were made of course by the Foreign Policy Syntheses. After a large part of the Foreign Office - not including RIBBENTROP, to be sure - had overcome its mistrust of the FA, such syntheses were requested in increasing number. A few examples from memory:

"Internal Situation in French Morocco."

"Attitude of the Hungarian Aristocracy toward Germany, England and France."

"Attitude of the Irish Government, Parties and Press toward Germany."

"The Relations between USA and South America."

"Treatment of the USSR in the Press and Broadcasts of Japan."

"Indications of a New Orientation in Finnish Policy?"

"Trips Abroad of Rumanian Politicians since ..."

"Attitude of Members of the Spanish Embassy in Berlin toward Franco and Germany."

The treatment of the last example was based necessarily in the main on the results of monitoring telephones of the foreign missions in Berlin. It may not be without interest if a few notes are given on the experiences of the FA with the "fruitfulness" - otherwise stated: the discipline - of the various foreign missions in Berlin. The Russians and Japanese displayed the greatest security discipline at the telephone - the intelligence gained from years of monitoring was virtually nil! The fact that the erotic activity of the Japanese was reflected frankly in the conversations of the members of the embassy was of no interest to Division 11. In the case of the Russians not even this was in evidence.

The restraint of the Americans and English was only a few percent less than that of the above. If here some statement of limited intelligence value was picked up now and then, it was only in conversations with Berlin diplomats in the second category mentioned below, i.e. when courtesy forced the Anglo-Saxon partner to respond in some measure to the talkativeness of the other.

Least cautious at the telephone were the French and Italians. Although all diplomatic missions knew that their telephones were monitored or at least figured that this was very probable, it was often astonishing to see the want of restraing shown by representatives of these two embassies when telephoning.

All the other missions lay somewhere in between; they had cautious and also communicative members.

In times of crisis it frequently developed that otherwise cautious diplomats - apart from the first mentioned group - abandoned their usual reserve.

Number of VN's?

The number produced by the FA can no longer be stated accurately. The first million had been issued at the beginning of the war.

Might VN's still be found?

As far as the Forschungsamt copies are concerned, the answer must be "No". The bulk of the VN's in the archives was burned at the Hartlieb Air Field near Breslau in January 1945. The job called for three days of hard work. The only numerical sequence of VN's taken along in the flight was destroyed at the various stopping points: Berlin, Jüterbog, Kaufbeuren, Austria, Rosenheim. The bulk in Kaufbeuren.

It would be theoretically possible for single evaluators to have taken along a few VN's secretly in their private luggage, contrary to the fixed orders for destruction. This, however, is very unlikely. Everyone desired to find his family again as quickly as possible and anyone who had VN's in

his luggage would have had to count on difficulties in view of the many highway checks. Then what in the world would he do with them anyway?

The "brown sheets" were collected and returned normally once a month by the many subscribers. Of course in the final months these returns were not always made; it is possible that some such copies might be found somewhere, but it is impossible to tell whether, where and when the 70 offices, more or less, entitled to receive VN's destroyed their secret material.

~~TOP SECRET~~

A R M E D F O R C E S S E C U R I T Y A G E N C Y

LF-241, Part IV

58/51/ TOPSEC/AFSA-14

Copy No. 1

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Deputy Associate Director for Policy and Records
on 9.8.2011 and by

~~TOP SECRET~~

LF-241, Part IV

58/51/TOPSEC/AFSA-14

The FORSCHUNGSAMT

1. Attached is an Armed Forces Security Agency translation of further questions submitted to former members of the Forschungsamt. (See Part I for list of QUESTIONS).

2. Part IV contains answers by Kröger to questions 16, 17, 19, 21 and 22; by Kurtzbach to question 19, and by Huppertsberg to questions 18, 20 and 21. It should be noted that the team declined to answer question 23. Part V will follow.

Translated: R.W.P.
August 1951
Distribution: normal

35 copies
41 pages

DF 241, Part IV.

THE FORSCHUNGSAMT

Question 16: Where were Russian diplomatic systems solved: (Krüger)

During my entire activity in the cryptologic field and even subsequently I have never known of the solution of any Russian diplomatic cryptographic system. All I know is that a commercial code was read currently in the FA. This commercial code is said to have been purchased. In particular, I never heard that the solution of Russian diplomatic systems - which were regarded as hopeless and not worked on by the FA - was ever achieved by any other agency inside or outside Germany. On the other hand I have heard that the Russians used codes with groups of differing lengths enciphered with additives of unlimited length so that even the occasional use of the same additive in repeated cases yielded no results because of the use of groups of differing length in the code. I could never find out where such an analysis had been made successfully because the source of this information was kept secret. I do not know anyone who might give information regarding this source today.

The former chief of the division which included the work area Russia has told me specifically that he never knew where a Russian diplomatic system could be solved either inside or outside Germany.

Question 17: Were messages of Russian bands and agents worked on? (Krüger)

I know nothing about the results of work on such messages in OKW or OKH.

Question 18: What were the W-Stellen? Equipment? Assignments? Was there regular collaboration with them? (Huppertsberg)

Receiving Stations

1. Assignment.

Question 18 asks about the W-Stellen.* The designation "W-Stelle" was not used in any way in connection with the Agency and the writer has never heard the term before. It is assumed that the questioner made a phonetic mistake and that the B-Stellen or perhaps the C-Stellen of the Agency were intended which together were charged with intercepting radio transmissions of all kinds.

The B-Stellen were charged with intercepting all radio telegrams, the C-Stellen with intercepting all possible radio phone transmissions.

In detail these stations were charged with the following duties:

a. With watching and identifying the transmitting stations and their correspondents and identifying the essential character of the content of the traffic;

b. With copying, recording and transmitting to the Agency the content of such transmissions within the limits of their specific instructions.

This assignment resulted in a perfectly legal way from the International Communications Agreement concluded between Germany and other countries in the Geneva Communications Commission (CCIT and CCIF Bern, Switzerland), according to which in signatory countries radio traffic was to be permitted only by persons and organizations possessing a license issued by the competent administrative authority of the country concerned, and according

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* Translator's note: The W-Stellen (Wetterfunkstellen) belonged to the cryptologic set-up of the Air Force. The question aimed at eliciting information regarding collaboration between the FA and the cryptologic unit of the Air Force (both under GORING). Cf. DF 215.

to which it was specifically made the duty of the individual countries to supervise radio traffic in order that unlicensed traffic should not be carried on and in order that international agreements regarding frequencies, call signs and other regulations be observed.

Consequently it is the duty of all signatory countries to have unlicensed stations (Schwarzsender) spotted, watched and suppressed by administrative authorities.

Since unlicensed transmitters frequently make extensive use of the call signs of licensed stations in their own or adjacent countries for the purpose of disguise and imitate regular traffic or frequently change their call signs or frequencies, daily or hourly, it was also necessary to reach some conclusion regarding the transmitter on the basis of the content of the traffic. Thus it automatically became necessary to intercept the messages and even to decrypt them under some circumstances.

In Germany the Agency competent for these matters from 1920 to 1933 was the Ministry of Defence, Counterintelligence Division, and after 1933 the Forschungsamt because according to a decree of the national government, the Ministry of Defense was only to carry out assignments directly connected with the military defense of the country.

Quite apart from the direct requirements of the Internationsl Communications Agreement the interception of radio traffic was also a direct political necessity for spotting and counteracting military, political, and economic espionage and sabotage of all kind directed against Germany and its population. Such activities had been carried on long before the war and especially during the war by foreign countries both directly and through camouflaged organizations.

The Allied Powers were officially notified of this activity of the Agency before the war and no criticism was made by them. Thus Foreign Minister Chamberlain on the occasion of his visit at Godesberg in 1938 was shown by Hitler an intercepted message in which a British statesman

had spoken and acted contrary to the instructions of his government.

To the B-Stellen were associated as far as location went the C-Stellen which also made use of the technical equipment of the B-Stellen to some extent as need arose.

It was the task of the C-Stellen:

To copy broadcast transmissions of foreign statesmen aimed at Germany; to copy newscasts and commentaries of foreign broadcast transmitters.

2. Local organization.

In order to intercept as many radio transmissions as possible it was necessary to set up B and C stations at various points in Germany because the radio waves came in with different strength at different locations depending on the frequency, time of day and season and distance from the sending station.

Because most radio transmissions, in particular those on long and medium wave and the short wave transmissions from very great distances, could be picked up almost equally well at all points in Germany, the receiving locations for all these transmissions was selected in the vicinity of Berlin for the purely practical reason that one thus required only short relay cables to the Agency. Interception within the city itself was not advisable because of local interference, poor wave propogation within the city, and due to difficulties in the erection of antennas.

In order to avoid the atmospheric disturbances, in particular "local thunderstorms" and to utilize the possibility of double reception with short wave, the main receiver station originally planned for the Berlin area was divided into two stations with like equipment.

Templin in the Uckermark (some 80 km north of Berlin) and

Lübben in the Spreewald (some 80 km south of Berlin).

Supplement No.3

The choice of these locations was determined by the fact that the Post Office Department regarded these B-Stations, which like all B-Stations were its property, as modern replacements for its antiquated receiver stations at the two main German radio stations Nauen (north of Berlin) and Königswusterhausen and Beelitz (south of Berlin) and because these locations were in the dead zone (skip distance) for most transmitters of these high-powered stations so that there would be no interference in reception by the high powered transmitters. The Post Office Department always reserved one of the four receiver buildings at each of these stations for its own operational purposes.

From these two major receiving stations Templin and Lübben ran a special cable with 100 pairs of strands and with high limit frequency, the two cables FLK224 and FLK226, direct to the main telegraph office in Berlin from which part of the strands, those intended for the Agency, were connected with the Agency building in Berlin-Charlottenburg. There the circuits ended in the C-Center in Grolmannstrasse where the Post Office Department had set up the terminal amplifiers for the Agency lines and the distributor devices (switch board). These were operated by postal personnel.

For those transmissions which could not be intercepted well in Templin and Lübben other smaller B-stations were set up near the boundaries of Germany. These were also located in buildings of the Post Office Department. They were:

Köln-Raderthal (Rhineland)

Eutin (Holstein)

Leba (Pommerania)

Breslau (Silesia) and

Konstanz (Lake Constance)

Then there were mobile B and C stations in motor vehicles which could be employed at various points from time to time. Such mobile stations were used during the war primarily in Noordwyk am Zee (Holland), Plovdiv (Bulgaria) and Reval (Esthonia).

3. Technical equipment.

The two main receiving stations Templin and Läbben were absolutely alike in structure and technical equipment.

For the sake of good reception and for reasons for direction finding each of these stations was located in damp meadow land with a high ground-water level. Each station had five large one-story buildings laid out in a quadrangle. Of the five buildings two in each case served for B-purposes, two for C-purposes and one building was for administration. There was also a seri s of very small receiver huts for D/F and radar instruments which had to lie outside the antenna area. The cables to Berlin began in a main switch room next to the office of the head of operations in the administration building. The cables from the individual receiver buildings came into the same room. The head of operations had to connect the transmissions from the receiver buildings to the outside cable.

Around the several receiver buildings were the masts for the various antennas and beyond these masts were a number of directional antennas, in particular rhombic antennas, whose cables ran underground to the several receiver houses. In the case of the rhombic antennas somstimes several were attached to the same masts in the same receiving direction but for different frequency ranges or for different vertical angles of radiation.

In each receiver building for B-purposes there were some 20 positions, all with the same standard technical equipment. When need arose several positions could be grouped into so-called areas which then carried out definite tasks as a close working unit.

The standard equipment for each position was approximately as follows:

1 Long-wave receiver. 3000 - 2000 m

1 Medium-wave receiver. 2000 - 200 m

2-3 Short-wave receivers. 200 - 12 m

Power supply units for the above receivers with good voltage stabiliqation.

1 single channel Morse ink recorder.

1 double channel/Morse ink recorder.

1 office typewriter.

To this standard equipment might be added in view of the special task of the position other equipment, e.g.:

Rotary commutators for multiplex telegraph systems.

Single side band receivers or applique units.

The receivers mentioned above, in particular the short-wave receivers, were specially developed,heavy instruments for the utmost stability of frequency, accurate frequency calibration and maximum selectivity.

Primarily these were receivers of the types

Spez 801 Gr, Fu HE a, Fu HE b, Fu HE c, FU HE d, Kw E a, E 52 (cover name K8Ln) and E 53. The writer played a significant part in the development of these.

These receivers had essentially the same internal structure and a sensitivity of

1 microvolt input voltage for 1 V signal voltage, 10 decibels above the internal noise level.

The internal construction was somewhat as follows:

2 HF-stages (2 r.f. preselector stages for image response reduction).

1 mixing tube (1 frequency converter stage for additive conversion).

1 oscillator tube.

3 if amplifier stages for adjustable selectivity.

1 second detector.

1 NF stage (audio frequency amplifier stage).

1 crystal controlled oscillator as beat oscillator and multi-vibrator for frequency calibration.

1 if amplifier stage and rectifier for getting automatic volume control voltage.

The instruments had separate input for linear antennas and for beam antennas, also special out-put of 600 ohms for the cable connection. The last receivers of types E-52 and E-53 to be put into use had motor tuning for four frequencies which could be pre-set as desired and out-put terminals for the automatic volume control so as to get a favorable ratio of signal to noise when connected up for diversity reception.

The recorders had to copy perfectly a Morse speed of 350 words a minute (= 256 bauds), there were a few recorders with a speed of 480 words per minute for special purposes.

4. Method of work at the B and C-stations.

Each position was manned by one operator who was relieved by others in round the clock shifts. The equipment permitted each position to receive on tape three transmissions simultaneously. If the double recorder had to receive double from two antennas because of poor reception conditions for specific transmitters, then each position could only receive two stations. It also happened that the operator received three transmissions on tapes and typed a fourth directly on the machine if the sending tempo was suitable.

If he was not copying himself, he sorted the strips from the machine, selected text in accordance with his instruction and copied it off the

tape on the typewriter. It was proposed that the operator should be given a teleprinter so that he could type teleprinter sheets in Berlin by direct cable. Nothing came of this proposal, however.

For transmitters which worked with multiplex systems of various kinds the above working methods only came into account for the DCCC system which worked with cable code on paper tape. For these systems the converter was located with the operator. For the other systems, which worked with teleprinter channels, the operator sent the tone frequencies received by the switch board and cable to Berlin to the C-Center which then transmitted it to the D-Station in Berlin where teleprinters were located for receiving land-line teleprinter transmission.

The individual operators at the B-Stations were connected through the exchanges by direct telephone with the receiving personnel in Berlin when messages were forwarded.

The speech inverters for radio telephone traffic were likewise in the C-Center in Berlin which was property of the German Post Office Department and was maintained by postal personnel. From here the traffic received was switched to one of the A-Stations in Berlin, according to the complex.

The C-Stations were housed in special buildings of the B-Stations. The technical arrangements were essentially the same as in the B-Stations. Long wave receivers (30,000 - 2,000 meters) were not required here but the number of medium wave receivers was materially greater. Of course there were no redorders and typewriters here, the positions were laid out differently and were larger because as a rule in case of broadcast reception there was switching to Berlin and each operator on broadcast reception could set ancwatch some 8 to 10 receivers simultaneously. Reception was usually more stable here and shifts of frequency were rare.

From the two C-Stations Templin and Lübben some 30 - 40 transmitters each were routed on to Berlin simultaneously.

When fading occurred in short-wave reception at the B and C-Stations, diversity reception was often used. For this purpose the same transmission was received from two or three antennas which lay at some distance from one another or ~~even~~ ended in different buildings and the tone frequency output of the receivers were connected up. At the same time the automatic control voltages of receivers with diversity supplements were connected up in order to get a favorable ratio between signal and noise. In many cases it was necessary to have double reception by both B or C-Stations Templin and Lübben.

Multiple reception by the so-called Musa-System (multiple unit steerable antenna system) was not employed because the expenditure of equipment was only profitable for stations with large scale operations which always received particular stations only. For the operations of the Agency this system involved too great a technical outlay and the system was not equal to the operational demands for very swift change of frequency and direction of reception.

The small B-Stations at Köln, Eutin, Leba, Breslau and Konstanz mentioned in the beginning had essentially the same technical equipment as the two big stations Templin and Lübben but each station had only one building and the number of positions was in operation simultaneously. Moreover B-Stations some 20 receivers were in operation simultaneously. Moreover the small B-Stations had only one channel each to Berlin and sent their material in urgent cases over two or three teleprinter channels on leased postal wires which were supplied with various models of the cipher teleprinter T-52.

The mobile B and C-Stations consisted of motor columns with two or three receiver vehicles, a transmitter vehicle and a teleprinter vehicle. In each receiver vehicle were two normal positions and a search position; they also had emergency power supply and telescopic antenna masts which

were fastened to the vehicle and set up on the working site. From time to time a D/F trailer with Adcock direction finder could be added to the vehicles.

The radio transmitter vehicle served for connection of the mobile B and C-Station with the agency and was provided with a 200 watt short-wave transmitter (15 - 100 m) and 3 short wave receivers of the type E52. It could work while on route but was operated with high antennas on masts raised by a crank when the operating site was reached. Moreover the transmitter vehicle had supplemental device for three-fold reception in diversity operation and for the translation of tone impulses into DC impulses so that when coupled with a special teleprinter vehicle it could carry on perfect radio teleprinter communication with the Agency in the mixed tone system.

The teleprinter vehicles were equipped with a cipher teleprinter T52c and a reserve machine and also had teleprinter connectors in order to be able to adapt the teleprinter to the varying currents and to varying line conditions. It was possible to have two-wire double current operation, four-wire double current operation on teleprinter channels and one-tone single current operation on telephone channels.

The individual positions of the B-Stations were grouped operationally into "areas" according to the current tasks, these "areas" were in charge of an area head who arranged the working schedule, shifts and assignments of the operators and oversaw matters. The area heads were subordinate to the head of operations of the station.

In addition to the regular receiver positiom each B-Station had certain "search ranges" which carried on the task of real radio reconncaissance. The search ranges had, along with normal standard equipment, special supplementary devices, e.g.:

Ultra-short wave receivers (12 to 3 m).

High fidelity frequency meters.

Oscillographs.

Panoramic frequency receivers.

Magnetic film recorders.

Field intensity measuring units and

Direction finders, which were housed in special D/F houses outside the antenna area.

5. Cooperation of the B-Stations.

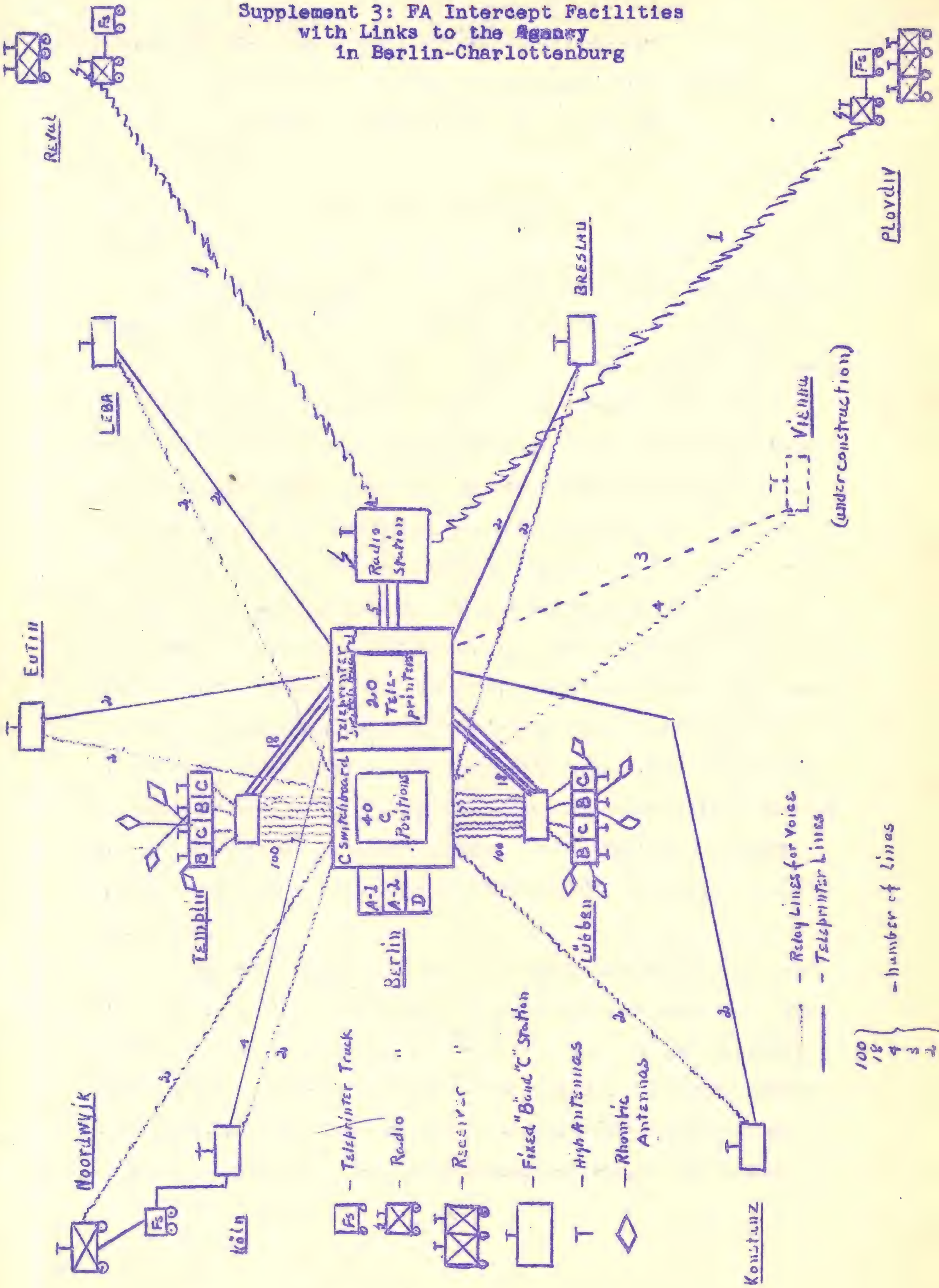
In practice there was no direct cooperation between the individual B-Stations and the Agency did not desire such cooperation because the stations were to supply their material without being influenced by one another. This does not mean that station heads did not know one another personally and did not occasionally give information by phone or discuss matters at their meetings in the Agency and the social hour which usually followed.

As a matter of principle the actual work at the stations was directed and co-ordinated solely by Division 4 (Ansatz = intercept control) which issued clear instructions in writing or by teleprinter to the individual stations on the basis of reports from the search ranges of all stations and of the superior knowledge of the Agency. The stations supplied all traffic intercepted on the basis of these instructions without any processing of their own, just as it came in enciphered or plain, to Division 5 (Sorting) and also sent operations reports in which they reported the results or failures and difficulties in reception.

In matters of administration and in exchange of personnel the stations dealt only with that control station in whose geographic territory they were located.

DF-241, Part IV

Supplement 3: FA Intercept Facilities with Links to the Agency in Berlin-Charlottenburg



Question 19: What card files were there? How arranged? What was the archive? To what extent were these two institutions satisfactory? (Kurtzbach)

Card Files and Archives

Introduction:

1. Before 1933 there had been no Agency comparable to the Forschungsamt. Hence the FA had no model for its card files and archives and both had to be developed gradually. Moreover in the early years one could not forsee the extent to which the agency would develop. The form of the card files and archives which appeared adequate in 1935 was no longer satisfactory either qualitatively or quantitatively by the end of 1936. Not until 1938/1939 did the FA get into full scale operations and not until about this time were the card files finally set up in satisfactory fashion. But even after that changes in organization and personnel had to be made. In the second half of the war, especially after the destruction of the FA complex in Schillerstrasse and the move to the first reserve location in Breslau-Hartlieb considerable limitations on equipment and personnel had to be accepted. Consequently the question of the character and working methods of the FA card files and archives can only be answered correctly for individual periods of tome. In what follows an attempt is made to describe only the form from 1938 to 1940, the period of highest development.

2. The problem which resulted for the evaluation of the FA, a problem which only became clear in the course of the first three years, was as follows: how was it possible to build up a card file and an archive out of at first thousands and then tens of thousands and finally hundreds of thousands of single items of every description (ranging from single newspaper articles to a synthesis of hundreds of decrypted radiograms)

where each worker - whether in the field of foreign or domestic policy, in the economic or technical, military or propaganda field - can find in the briefest possible time everything that ever reached the FA on every individual topic without ending up with a huge, over-inflated outfit.

In the endeavor to find a satisfactory solution another problem turned up: where was the proper limit between centralization and decentralization.

Development began with complete centralization. But the bigger the office became, the more difficult it became to maintain close daily contact between the worker and the archivist. And without this it was clear that much was put in the archives to no purpose and that much which would have been valuable to the worker went into the waste basket. The section dealing with the foreign policy of the Soviet Union called for an entirely different point of view in the selection of archive material from that desired by the section dealing with economic policy and internal policy, one which would take note of the inter-action between Soviet diplomacy and national Communism. This resulted in a certain necessity for decentralization.

From beginning to end, however, the agency retained the basic division into

Personality card file and

Topical archives.

I. Personality File

In contrast to the topical archives the working principles of the personality file were as simple and uncomplicated as one can conceive of: each new name that appeared was given a card.

On this card - for many names 10, 20, 30, 40 cards were used in the course of years - every occurrence of this name was recorded with a notation of the document where it was to be found.

There were no exceptions to the rule, not even in the case of leading men of the National Socialist regime. So it came about that the pack of cards on HITLER was one of the largest. From these cards one could ascertain in a very short time when ROOSEVELT, for instance, had mentioned him in a speech or written document; what ROOSEVELT had said in detail was not apparent from the card but could be learned from the topical archive by calling for the document noted on the personality card.

Insofar as people who were not "prominent" but were hitherto unknown to the FA were involved, the file worker endeavored to fill in gradually the lines left vacant in the heading for personal details. Often the first entries were in pencil with question marks. With thousands of names which appeared once in a radiogram or telephone message supplemental entries were never made. But they were made on a surprising number of cards. Of course the greatest difficulty was encountered with Germans named MEIER and with Anglo-Saxons named SMITH, etc.

The heading of the card had, in addition to space for personal details, space for a picture which was usually cut from a newspaper or illustrated magazine and also a box with the heading "inquirer". In this box were entered a few letters indicating who had made inquiry. Which letters were used to indicate Counterintelligence, Main Security Agency, Foreign Office, Minister of Economics, etc., I no longer recall. These cards dealt with so-called "customers" who were watched at the behest of some other agency. Actually almost 99% of the cards contained names which turned up in the general survey of radio traffic and of foreign telephone conversations and had not been entered at the request of other agencies. As far as the card file was concerned, no distinction is made between these two classes. In the case of "non-customers" the same letters were always entered so that anyone using the file would know at once that it was a "non-customer".

This practice caused the FA many a headache. When "prominent" Germans, high officials of the ministries, generals and the like visited the FA with GÖRING's permission, they were shown the card file. Then the visitors were apt to ask for "their" card. This was always shown them. But if they then saw the box "inquirer" with mysterious looking letters in it, it was almost never possible to destroy the false impression that someone had requested that they be watched.

In the case of "customers" tabs were attached to the cards showing to what special category they belonged: diplomats, Communists, journalists, etc. This made possible a swift answer to inquiries concerning such a category.

Some sample cards follow: the data have been invented, of course, but they correspond precisely to the type of entries in the FA.

Examples

Inquirer:	ADRIANU, Grigory
Key letters for Counterintelligence No. 942	Assistant to the Roumanian Military Attaché in Berlin. Captain. Born 11.5.1904. Unmarried. In Berlin since 1.4.37.

- -

For career see Archive 198456.

3.4.37 DUPONT (N 234 456) - 44. SMITH (N234588) - Mrs. Elsa SCHNEIDER.

(N 234776) - 11.4. Miss Käthe MÜLLER (?) - 14.4 - 19.4. Private journey

to Garmisch-Partenkirchen, "Hotel zur Post" - 22.4. BARTELOZZI (N 432596) etc.

In the above example we have a request from Counterintelligence to watch as a matter of routine the new assistant to the Roumanian attaché with regard to his connections, conversations, travels, etc. All his ascertained connections can be surveyed on the card. The names mentioned were entered on new cards, if not already in the file, on which the name Adrianu appeared with the same date and the same N number. In the case

of "Miss Käthe MILLER" it may be noted that the (?) signified that the name and spelling was doubtful but not her identity, residence, etc. A "?" signified that the spelling had not been clarified so that there might be confusion with a name that sounded similar.

The card, which was usually far more extensively filled after a few weeks than in our example, made it possible to answer quickly inquiries of Counterintelligence such as: has ADRIANU much contact with the Russian Legation? or: was he out of town in May? It also made possible a quick finding of the N-numbers dealing with ADRIANU and through these of the documents, in this case chiefly telephone calls by him. If Counterintelligence asked the FA: please put together today everything you have on ADRIANU, it was possible for the worker to have everything on his desk twenty minutes after the request arrived at the very latest.

* * *

Inquirer: Dr. HEINZELMANN, Werner
Key letters for RSHA Nr. 1245
Berlin-Pankow, Hildegardstr. 93 Tel. 34562.
Until 1933 Professor of Physics at the T.H. Berlin.
Born 5.6.89.

- -

8.2.38 Dr. SCHMITT (N 345876) - 10.2. Else GELLENTHIN? (Gellenin?). H. asks how G likes Switzerland; she should visit him soon - 13.2. Paul MEYERHOFFER (N 543629) - 15.2. H inquires of the travel bureau "Unter den Linden", how late it is open evenings, etc.

Here an inquiry from the Main Security Agency was involved which was occasioned by the following: "Professor Dr. Werner HEINZELMANN was a member of the KPD until 1933. He participated in experiments which concerned national defense. There is a suspicion that he wishes to go secretely to the USSR."

In this case the worker had to enter on the card all details which seem to bear on the problem.

Inquirer: MOORE, Gerald

Non-customer: Captain, presumably in the 1st Sussex Infantry Regiment. In April in Cairo. Since May 1938 supposedly in Malta.

- -

14.4.38 G.M. informs Evelyne MOORE, Greenwich, Park Lane 23, that his leave must be postponed due to change in location. E.M. on 15.4. to "Captain" M., Cairo, (details of address illegible) acknowledges receipt of message with regret. - "Morning Post" of 12.5: First Sussex Infantry Regiment is being transferred to Malta shortly.

This is an example of how names which appear in the general monitoring of plain text radiograms (designated by "F") were entered in the card file.

* * *

Inquirer: MORRISON, James

Non-customer 1 September 38 in Teheran, Hotel "Europa"

- -

"Credit Lyonnais" informs a James MORRISON in Cairo on 4.9.38 that Standard Oil Company has deposited 23,500 dollars on his Paris account.

Not much could be done with this information. Nevertheless a card was made in such cases in the hope that further information might come in later or that it might be interesting someday to know that M was in contact with Standard Oil and was in Teheran in September 1938.

In the personality file of the FA were t ens of thousands of such cards which were never supplemented and never used, but at some time several hundreds of them did prove very valuable and supplied important bits for this or that situation report.

Inquirer: TABOUIS, Genevieve

Non-customer: Journalist in Paris. Correspondent for papers X,Y,Z.
Born (date) Picture.

- -

3.7.39 article in "Matin" on the situation in Poland; A 43567 - 4.7 Conversation with Embassy Councillor COULONDRE, French Embassy, Berlin: T hopes she may soon see C in Paris. - 5.7. "Aftemposten" - Stockholm refers to T-article in "Matin" on the attitude of the Polish Foreign Minister toward Germany A 734528 - 5.7. SMITH, "Daily Mirror" - representative in Berlin expresses to BARUZZI, "Stampa", his doubts as to the reliability of T-information (N 876543). - "Chicago Tribune" cites T-article on Poland in "Matin" A 765839. - etc.

People like Madame TABOUIS soon had a whole pack of cards which showed their publications almost without a gap.

* * *

The foregoing examples should suffice to make clear the principle followed in the personality file of the FA and its practical workings. As far as the size of the file was concerned I can only state that it contained at least 1-1/2 and probably about 2 million names. Many of these were worthless ballast. On the whole, however, the personality file served the purposes of the FA admirably. The system and its application was recognized by all units of the Agency as adequate to meet all demands of the intelligence work. Only in the early years were there complaints but these were directed not at basic matters but only against the unsuitability of certain workers. When these people had been replaced by others who were more dependable, speedy, and better able to put two and two together, the opinions expressed regarding this unit were favorable. The personality file remained centralized until the very end.

Everyone working in evaluation was obliged to consult the personality file on every name that was unknown to him or where there was any question regarding spelling or identity. At first they went and asked the questions personally, later used the telephones, and finally - because the telephone often led to errors and particularly because it forced the

the file workers to interrupt their work for long periods, inquiries were made in writing on a printed form which was sent by tube and on which the answers were returned by tube. Those inquiries which were not marked urgent were collected in the file room and turned over the night shift so that the answers were always ready on the following morning.

On a normal work day the personality file had to answer between 700 and 1,000 inquiries.

II. The Topical Archive

Although the personality file was started on the very first day, so to speak, it was years before the final form of the topical archive was developed. It was some time before the need for it was recognized and before it was clear precisely what purposes it should serve. It arose primarily from the practical consideration that it is impossible to get at many things by working with names and persons and that the approach must be by concepts. With an assignment as universal as that of the FA, however, the same political or economic fact assumed an entirely different aspect according to whether one approached it from the point of view of foreign policy, or from a military, economic or propoganda point of view. Further more there are always two sides to the relations between two countries.

It is impossible to take up here the various experiments made to find the system which would satisfy the needs of the several evaluation divisions as well as those of cryptanalysis. The final form in any event was the decimal system worked out in 1937.

The system

The principle was as follows:

Each folder of the topical archives was given a 10--digit number. Likewise each card. The first digit indicated the continent; the next

two digits the country. The next always indicated the same major concept for each country. The next the same subdivision of each major concept. Those following signified a further sub-division of the sub-division by countries or by groups of topics. With the reminder that it is no longer possible to state from memory which of the 10-digits designated which concept, an attempt will be made to illustrate the principle:

Digit 1:

Continent	Europe	1
	America	2
	Asia	3
	Africa	4
	Australia	5

Digits 2 and 3:

Country	Germany	01
	France	02
	Belgium	03
	Holland	04
	Luxemburg	05
	Switzerland	06
	Austria	07
	Hungary	08
	Poland	09
	Lithuania	10
	Latvia	11 etc.

Digit 4:

Main concept	Government	1
	Foreign Policy	2
	Internal Policy	3
	Economic Policy	4
	Press	5

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Main concept (cont.)

Armed Forces	6
Culture	7
Propaganda	8 etc.

Digit 5:

First sub-concept e.g. under economics	Agriculture	1
	Industry	2
	Commerce	3
	Trades	4
	Communications	6
	Shipping	7
	Combines	8 etc.

Digit 6:

Second sub-concept e.g. for communications	Railways	1
	River shipping	2
	Highway construction	4
	Motor traffic	5 etc.

Digits 7 to 10 permitted a further break-down of the second sub-concept into four others. e.g. under industry into

(digit 6)	Iron working industry	1
(digit 7)	Machine factories	1
(digit 8)	Machine tools	1
	Agricultural machinery	2 etc.

This classification made it possible to find all FA documents on the same major or minor topic for two or more countries at once, e.g.: what machine tool factories are there in Belgium, Holland and Luxemborg?

The material was found in the folders: 10342111
10442111
10542111.

For at least each major topic under each country and, for the first and second sub-division, if inquiries were frequent, individual cards

were prepared which contained all important data in brief abstract. The cards "French Government", (for instance), gave all data on the French cabinets of recent years including the secretaries and division chiefs. Hence these cards served for a quick orientation, the content of the folders served for detailed work. In the case of complexes involving two or more countries, e.g. when a commercial treaty was concluded between France, Belgium and Holland, the three corresponding cards on this topic were filled out in like form; in the folders the text of the treaty was given only in the French folder while the folders for Belgium and Holland contained the notation:

For text of the treaty see (folder number.....
"France, Commercial Treaties").

All names contained in the topical archives had to be entered on individual cards in the personality file. The reverse was not true because the personality file contained names of tens of thousands of private individuals where the spelling and identity was not sure. Checking the card file against the archives repeatedly at brief intervals for names helped frequently to eliminate errors and uncertainties.

To facilitate the work of the archivist and to make it possible for untrained section heads from the evaluation divisions to find documents, the filing system was printed; it yielded a volume of several hundred pages. It was laid out very clearly and therefore enabled the non-archivist to determine at once under which number would be filed an article on the Pan-American Conference, a broadcast on Anti-Soviet trends in Georgia, a statistical study of minerals in Turkey, a decrypted message on the impending transfer of a Roumanian councillor of legation to the Embassy in Lisbon. The evaluation of the U.S. Air Forces by Soviet Military Journal, a telephone report by a journalist on an impending journey of Churchill, a pamphlet on the problem of nationalities in Syria, etc., and also the indicator numbers under which all available material on any question might

be found. The familiar reference works like the "Gotha" and "Who's Who?" had been incorporated into the personality file and the cards in the archives.

A short time before the filing system was introduced, a noticeably favorable interplay between the card file and the archive on the one side and evaluation and cryptanalysis on the other appeared: the better, more complete and dependable the card file and archives were, the better evaluation and cryptanalysis turned out. The reverse was also true.

Of course when one looks back, many things were filed in the archive and recorded in the card file which never bore any fruit. But the use which not only the FA but also many ministries had of this unique German Central Intelligence outweighed the unavoidable waste many times. Card file and archives became from year to year an increasingly valuable mine of historical and current knowledge in all fields. Combing of all secret sources gave them special value. It may be said without exaggeration that what could not be found in the FA archives was not worth knowing.

Its value, however, lay not merely in the enormous mass of factual material available but in the fact that, thanks to the decimal system used, all available material could be found in what was often an astonishingly short time, even on most unusual topics. If the heat was on, this could be done in ten minutes or less! And finally this system permitted one to get at whatever one was seeking in two ways: starting with names, and starting with the concept and hence with a time concept, "What was the name of the Swedish journalist who had to leave Moscow suddenly in 1937?" If it had been necessary to run through all the journalists in the personality file (marked by tabs), that would have taken hours.

In the archive by looking under "Sweden"

"Press"

"Foreign Correspondents"

"In Moscow"

the answer could be given in less than one minute. Or: "In what speech,

when and where did DALADIER say approximately the following (.....) about Spain?" the archivist only had to reach for the folder marked

"France"

"Foreign Policy"

"Spain".

If this was too fat he could also look on the DALADIER card, on which all speeches were entered with the date, and on the basis of these details check through the foldar.

It may be noted that the archives had an extensive library of German and foreign reference works in the fields of politics, economics, technology, etc., directories of many large cities, press almanacs, atlases, etc, which could be consulted for supplemental information.

Organization

Until about the beginning of the war the personality file and archive were combined in Division 10 of Office V (Evaluation). But as has already been mentioned it turned out that the topical archive frequently could not satisfy any of the three divisions and that too much aimless work was done. Hence a reorganization followed which united the advantages of centralization with those of decentralization:

The topical archive was divided among the three divisions. While Division 13 (State Security, internal policy and propaganda) set up branch archives, 11 (Foreign Policy) and 12 (Economics) assigned to each section its own archive. The value for the single sections and branches was apparent: the archivists quickly learned by daily contact at close quarters what was actually needed; they were brought closer to the work of evaluation and saw that with their aid better reports could be produced. It was now no longer necessary for the sections to set up little "private" auxiliary card files and archives.

The possible disadvantage that uniformity in handling documents would be lost and that all material might not be found in case of inquiries from Evaluation, Intercept or outside agencies, was avoided by locating the central control of the archives in Division 10. Actually the following procedure was used:

Everything which a section wished to have filed was not placed directly in the appropriate folders from which the proper cards would be prepared as before, but was sent first to this collecting point in Division 10. Here a notation of the correct decimal number for the document was made. Here it was also decided whether the document should be sent to other archives of the same or of another division; in such cases the document was sent direct. The other unit or units could then make references on their cards. In the case of VN's they received a second copy of the report for filing. Inquiries from other divisions or from outside the Agency continued to go to the Central Unit in Division 10 which used all the single archives in the preparation of a reply. After a short trial period this mixed form worked out admirably.

Aside from the centralized personality file and the ultimately half decentralized topic archive, the FA only had technical files for intercept work and special files for cryptanalysis. For collateral information the cryptanalytic unit used the V topical archive and personality file, both of which were consulted heavily by Office IV.

Personnel Date

In 1940, when the FA had the greatest strength, some 250 people were engaged in work on the card file and archive. Before the war the workers were predominantly male but from the fall of 1939 on about 80 percent were female; their performance was fully equal to that of the males.

In 1945 only about 90 persons were still engaged.

Since the structure, extent, working methods and output of comparable foreign archives and card files are not known, it is only possible to judge the value and performance of the FA archive and the FA card file by German standards. It is certain that before 1932 and from 1933 to 1945 no ministry or other central agency had anything comparable.

The fire which destroyed the folders and cards in Breslau in January 1945 in compliance with orders certainly destroyed the greatest archive of open and secret information that Germany ever possessed.

Question 19: What card files? How set up? The Archive? Much used? To what extent did they prove satisfactory? What more might have been desired? (Kröger)

This question has already been answered fully from the standpoint of "Evaluation", hence only brief supplemental remarks from the point of view of Cryptanalysis may be made here.

The so-called System Card File in the cryptanalytic division contained a special card for all cryptographic systems ever worked on or watched within the Forschungsamt. Since only diplomatic traffic was worked on, this contained practically all the diplomatic systems used in various countries of the world aside from Germany. In the answer to Question 2 will be found on Page 8 (Part I) details regarding the form of the individual card. The systems were arranged according to countries and for each country were given a serial number. From this file one could get:

1. A general survey showing the ratio of readable and non-readable systems or of systems worked on and not worked on;
2. A check on the extent to which new systems had already been analyzed or still must be analyzed;
3. Information as to the line of development in the field of cryptography in each individual country and the present status of knowledge regarding the security of systems in each country. Often a knowledge of this point could give important clues when analyzing new systems.

It was also customary to keep a so-called "group card file" for each non-alphabetic [two-part] code. Each card contained simply the cipher group with the recovered meaning. As a rule only the so-called "inked groups" were taken up into the file, i.e. those groups whose meaning was already absolutely sure so that the entry in the code which had been in

pencil originally could now be made in ink. Wherever necessary even the uncertain meanings might be taken up into the card file. There was need of this, for instance, when a code was used with additive. The cards were arranged alphabetically according to meaning so that the card file formed the counterpart of the code. These code files were absolutely necessary when solving additive for the reduction of columns of slight depth.

Information has already been given regarding the archives, its card files and the information bureau associated therewith. Here we shall only mention the extent to which the cryptanalytic division made use of these arrangements and the results.

It can be said in general that this information center was very popular with the cryptanalysts and that they made extensive use of it. Especially when working on new codes the experts used to plague the information center with all kinds of questions.

Although these questions were generally far from precise in the early stages of code breaking, the information given usually came so quickly and was so satisfactory that the work of the information section was regarded highly.

If the information section sometimes fell down, that was due either to poor phrasing of the question or more rarely to the fact that new people were working in the information section who did not yet know how to exhaust the possibilities of the archives with its reference works and card files. In any event the successes of the cryptanalytic division were in some cases due in no small measure to the work of the information section.

LF 241 Part IV.

Question 20: Special devices (Huppertsberg)

There were a number of special devices for clarifying radio links which did not work with low-speed Morse or with pla n language.

1. Telegraph Devices

a. Low-speed Morse traffic was copied by ear with a head phone directly onto the typewriter. High-speed Morse systems with up to 340 words a minute were copied on paper tape by the previously mentioned recorders.

b. For certain high-speed Morse transmissions operating up to some 480 words a minute special receivers had to be employed where a swiftly moving balanced armature pressed the paper tape against a rotating worm shaft.

c. For lines working with the DCC System (double cable code communisation system of J.V. HIGGIT) there were special synchronous commutators which separated the two traffic channels, whose impulses were nested on a ti.e basis, and which erased from the written records the alternation (Wechsel) (revs)* automatically transmitted where letters were missing. These devices could be switched over for the reception of the three different types of signals which occur. The ink recorders used to copy these links had to be trimmed for the neutral zero position of the printing channel in order to receive cable scrip code (Kabelschriftkode).

d. For receiving special systems with various audio channels multi-audio channel systems) there were supplemental audio filter units coupled with amplifier tubes which could be set for the several audio channels.

e. For certain multiplex systems, e. g. for the U.S. WER Stations,

* Not clear to translator: (revs = revolutions?) supplied by author.

it was necessary to add to the intermediate frequency amplifier of the receiver a special intermediate frequency pilot carrier, in order to move the several traffic channels of a transmitter more widely apart from one another and then to separate them by audio filters. If some of these channels were operated with teleprinters, then the audio frequencies of these channels were translated by audio signal detectors into DC impulses which then controlled the teleprinters.

f. In one case it was necessary at the beginning of the war to use a Baudot commutator and change one teleprinter for the Baudot alphabet.

g. For the devices used for one other important system see Question 21.

2. Voice devices.

a. In voice traffic use was made in the simplest cases of normal speech band inverters which added to the speech band lying between 300 and and 2700 cycles per second a fixed carrier frequency of 3000 cycles per second. After rectification one got by this supplement the two side bands between 300 and 2700 and 3300 and 5700 cycles per second, of which the lower band lay on the correct side and was intelligible after filtering.

Since there were some radio phone links where there was frequent alternation between "clear" and "inverted" operation and since it was very important for operational reasons to get statements by the operating personnel regarding subscribers' numbers, announcements of calls and fees in plain language, a special inverter switch had to be developed which automatically gave plain language by throwing in or bridging the inverter.

b. There were also special audio-speech band converters of our own construction where the additional carrier was not constant at 3000, but was adjustable for frequencies between 0 and 16000 cycles per second and where the upper or lower side bands would be filtered out using a switch through a filter of 300 to 2700 cycles per second.

c. For intercepting one particular voice link it was necessary to divide the entire switch band between 250 and 3000 cycles per second by

filters into five separate partial bands and to bring these five partial bands into the correct tone position by several supplemental carriers or to partially transpose and to combine these bands again into a single band. In this system the carriers and filters had to change at time intervals synchronized with the switching in the transmitter. The switching mechanism was activated by a key tape in which holes were punched corresponding to the key for activating small contact levers.

Clarification and development of the devices for this system took only a relatively short time because the technically obtainable steepness of the band filter curves and the reaction time of the filters imposed natural limits to the number of partial channels and to the speed of band shifting at the sending station.

Discovering the encipherment and the key period was facilitated inasmuch as it was usually sufficient to get only two or three of the five bands correctly in order to understand everything because the human ear is capable of supplying automatically missing portions of sound and overtones. The key period, moreover, was only a short one.

(Apparently the experts at the transmitting end regarded this system as very secure since, as the writer was later told, they permitted their leading statesman to talk freely using this system).

d. For receiving transmissions with suppressed carrier or with single side bands special single side band receivers were available which supplied artificially the missing pilot carrier in the i.f. amplifier. The total band thus received was then broken up by filters into the several speech and telegraph channels.

Question 21: What do you know of any special Russian equipment? (Huppertsberg)

There were some 20 to 30 traffic links operating with multi-channel teleprinters where the 5 successive impulses of the teleprinter alphabet of different channels were nested in time sequence.

Among these systems some were noted with 2, 3, 4, 6, 9 and 12 teleprinter channels.

At the sending end the five impulses of the individual channels were combined by means of a rotating contact distributor (rotary commutator) into a common nested sequence and to this was added a synchronizing impulse for each revolution. The contact arm of the revolving distributor controlled the radio frequency carrier of the transmitter in direct current on-and-off keying. Example of the two-channel cycle:

S 1 I 2 II 3 III 4 IV 5 V
S 6 VI 7 VII 8 VIII 9 IX 10 X

S = synchronizing impulse,

1 2 3 4 5 = signal impulses of the first letter of the first channel,

I II III IV V = signal impulses of the first letter of the second channel,

6 7 8 9 10 = signal impulses of the second letter of the first channel,

VI VII VIII IX X = signal impulses of the second letter of the second channel.

At the receiving station the tone impulses of the receiver were rectified and conducted through a revolving distributor which recombined the impulses into groups of five for each of the channels which then passed to the teleprinters.

The sychronizing impulse served to assure synchronization between the revolving distributors at the sending and receiving stations.

On many links such systems were used and the sending was by inverse current keying where for the positive and negative signals two closely adjacent sending frequencies were used in d.c. (c.w.) keying.

For intercepting this traffic there were several teleprinters fitted with the special alphabet of the country concerned.

Down to the capitulation on 8.5.1945 these systems obviously were not operated with automatic encipherment, but the sequence of signals remained the same for each revolution.

When links of this system occasionally received enciphered messages, these appeared only rarely and in individual channels and only for single telegrams; they had obviously been especially enciphered by other means before transmission.

Systems other than those mentioned above had not been identified down to 8.5.1945.

Question 21. What do you know concerning any Russian special devices? (Kröger)

A detailed report is given in the survey of various cryptographic systems [DF 247] on experience with the Russian multi-channel radio cipher machines. It need only be mentioned here that the 2-channel cipher machine was withdrawn from use a few days after the Forschungsamt succeeded in solving it. When the machine was put into use again some weeks later, the cipher device of the cipher channel had been so altered that solution by the previous method was no longer possible since, when switching the machine from procedure traffic to cipher text and between a pause in transmission and cipher text, the switching became effective at once and the idling period of 7 elements had dropped out. That the same machine was involved was proven only by the receiver device which still broke up the scrambled text into a clear and a cipher text in the same manner as before. Because OKH had great interest in this traffic and its own receivers did not work perfectly, and because further detailed work at this time (Autumn 1943) in the Forschungsamt was not possible, OKH received all new traffic on this machine for processing. It must also be mentioned that, due to the excessive distances, the receiving apparatus of the Forschungsamt only rarely produced cipher text which did not now and then contain one element too many or too few in consequence of atmospheric and other interference. Although formerly corrections of each cipher text had been possible on the basis of the first and last seven elements, there were now no clues for these corrections. Due to uncertainty regarding the actual intervals the report on the investigation by OKH stated that the size and stepping of the old wheels had apparently been retained. Before it was possible to supply OKH with an adequate amount of cipher traffic relatively free from garbles for study purposes, the receiver in the Forschungsamt was destroyed by bombing. I do not know of any further work on the system in Germany.

Question 22: Did anyone concern himself specifically with the question whether the USSR had a central cryptanalytic unit and if so, where it was located, how strong and how capable. (Kröger)

To my knowledge no one in the FA was specifically occupied with the question whether and where the USSR had a central cryptanalytic unit, how strong it was and what results it had had. Although no positive information on this matter existed, I never entertained any doubt as to the existence of such a unit in the USSR. In fact I am convinced that this unit was admirably organized, that this organization achieved excellent results, and above all that Russian cryptography as a whole was under an extremely precise,able control, in which connection its success led one to infer that this control had been organized by the main cryptanalytic unit.

These assumptions are based on the experience which has been confirmed repeatedly in all countries that from the degree of security evidenced by the cryptograms of a given country can be deduced with absolute certainty the existence and extent of a cryptanalytic unit and its direct influence on the cryptographic systems of the country.

For instance, if Switzerland were still using substitution slphabets as late as 1935 and a few years later introduced codes with groups of varying length enciphered by substitution tables and transposition within the group, and if in 1940 it was still using the Enigma for months at a time with a fixed message key for each day of the week and then three years later enciphered the indicator groups and message keys on the machine and changed the wheel sequence from message to message, that indicates an advance which can only be explained by knowledge gained in the field of unauthorized decryption. On the other hand the amount of knowledge thus revealed leads to the inference that this unauthorized decryption was only carried on in a very modest way.

In like manner it can be inferred from the development of the cryptographic systems in Sweden, for instance, that about the beginning of the war a cryptanalytic unit must have been established there which must have been of considerable size.

Finally if France, England and the United States used systems with

the highest degree of security and at the same time used simple codes, and if reports were encrypted in large measure with a simple code but with every important sentence in a particular message superenciphered in a secure system, this must be regarded as proof that the cryptanalytic units of these countries understand clearly the security of the several systems and that they have worked out appropiate systems and regulations for their use, but that these cryptanalytic units are not able at the same time to exercise control over the observance of these instructions. Only in this way can one explain the fact that in these countries systems, which in and of themselves are good, are used for a longer time and for a greater volume of traffic than is admissible, so that in this way the security of these systems is compromised, and that even important messages of a secret nature, for which encryption by a secure system is prescribed, are encrypted by simple code in urgent cases, even though the content is most secret. Of the numerous examples which might be adduced, the following may serve as an example:

The additive number used by Great Britain, which ran to 40,000 elements and served for the encipherment of the 5-digit code and was replaced at definite intervals of time, offered as a rule adequate assurance of security. But if in periods of greatly increased diplomatic activity with telegraphic traffic many times the usual volume the additive is not replaced correspondingly sooner, especially since increased security is desirable in such periods, then this is a sign of deficient control.

When simple codes and superencipherments are used side by side, then in times of increased diplomatic activity experience shows again and again that if adequate controls are lacking code clerks pressed for time encrypt messages with secret content in simple code in order to save the time required for encipherment. The following incident is characteristic:

About 1942 the President of the United States sent a personal letter to the Russian Chief of State. The code clerk, contrary to his regulations, used a simple 5-letter code. The radio text was decrypted in Berlin

immediately after it was received and was sent to the Foreign Office as a VN. A second piece of carelessness on the part of the Germans resulted in the release of this letter to a journalist by a high official of the Foreign Office who overlooked the confidential character of the communication. The letter appeared in the press at approximately the same time it was handed to the addressee in Moscow.

But even less pronounced carelessness, e.g. giving preference to certain indicator groups or the often unconscious preference for certain rows and similar phenomena of which the code clerk is unconsciously guilty but which can endanger cryptographic systems at least in part, prove that the cipher personnel has not been trained by experts of the cryptanalytic service and is not constantly supervised by such experts.

If, on the other hand, such breaches of security are not to be observed in the encrypted traffic of the USSR or are limited to rare exceptional cases, it is possible to deduce from this fact that the Russian cipher personnel is either far superior to that of all other countries in training and awareness of its obligations or that the handling of all systems by the cipher personnel is subject to such strict and regular control that such errors or habits are either avoided entirely or are discovered at once and stopped. Since the former possibility is not very likely, only the second explanation remains.

Furthermore it must be assumed that this control - because of its effectiveness-is in the hands of cryptologists because only they have the necessary experience to recognize at once all mistakes which are likely to compromise a system.

~~TOP SECRET~~

A R M E D F O R C E S S E C U R I T Y A G E N C Y

DF 241, Part V.

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DF 241, Part V. 59/51/TOPSEC/AFSA-14

THE FORSCHUNGSAMT

1. Attached is an Armed Forces Security Agency translation of further questions submitted to former members of the Forschungsamt. (See Part I for list of questions).

2. Part V contains answers by Kröger to questions 24, 25, 28, and by Kurtzbach to questions 26 and 27, also a critical evaluation of the FA as an intelligence agency by Kurtzbach.

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DF 241 Part V

Question 24: What were the relations of the Forschungsamt to other cryptologic units? Foreign Office (AA), High Command of the Army (OKH), High Command of the Air Force (OKL), High Command of the Navy (OKM), High Command of the Armed Forces (OKW), Police, foreign cryptologic units? [Krüger]

The relations of the Forschungsamt to the other German cryptologic units are largely explained by the history of the origin of the Agency.

When the Forschungsamt was founded in 1934, this was done with the more or less outspoken intention of creating an intelligence service which in the evaluation and compilation of intelligence would not follow its own ends, in particular in respect to power politics. It was feared that this was done by the existing organizations, in particular by OKW.

Since the Forschungsamt was founded as a rival of the existing organizations with the express purpose of some day rendering them superfluous, it could not help encountering resistance, in particular from OKW whose intelligence service did not limit itself to the military field although the Forschungsamt did not consider military cryptographic systems as belonging to its field of endeavor.

This basic opposition to the OKW was materially increased by the fact that the leading figures in the various divisions of the Forschungsamt had for the most part been intelligence officers of OKW who went over to the FA. In consequence there were strong personal feelings and enmities which augmented the basic differences.

Consequently the relations between the Forschungsamt and OKW were very strained from the start. Any exchange of cipher traffic received from the various intercept stations, any division of the field of endeavor or any agreement regarding a common field of endeavor was out of the question from the beginning. Whenever a meeting of members of the two agencies became unavoidable in the course of time, there were strict orders to limit this contact to a minimum under all conditions.

The Forschungsamt maintained no relations with cryptologic units in foreign countries since this was not compatible with its assignments. So far as I know only OKW maintained such contacts and only with particular countries, e.g. Austria and Hungary.

In peacetime there were no connections with the cryptanalytic units of OKH and OKL because in peacetime these agencies were quite insignificant and there were no common interests. Insofar as common interests appeared during the war the relations with these two agencies were excellent. For instance, when the FA still had no Hollerith machines the very significant Hollerith section of OKH was always at its disposal for carrying out urgent major assignments. Moreover, insofar as circumstances permitted, there was an active exchange of ideas and experiences.

As for the relations of the FA with OKM and the Foreign Office there was an obvious desire on the part of the FA to make these as good and close as possible. Since OKM acted with marked reserve - its relations with other cryptanalytic units were always characterized by reserve - the relations between OKM and FA were, so far as I know, always very courteous but never close.

Although the cryptanalytic division of the FA and that of the Foreign Office worked in the same field, namely the diplomatic systems of foreign countries, the relations between the two agencies were the best conceivable.

Not only did the Foreign Office receive copies or photostats of encrypted messages intercepted by the intercept stations of the FA, and not only did it receive the evaluated intelligence in the form of the VN's, there was also a regular exchange of ideas between the experts of the two cryptanalytic units which led in time to an exchange of results and to some degree also to a division of labor with a resulting exchange of results. Of course the collaboration which gradually became ever closer resulted less from any agreement between the directors of the two agencies than from a

laissez-faire policy on the part of the leaders who sought to derive benefits from the overlapping which they could not limit and to cut down its obvious disadvantages.

I know nothing of any relations between the FA and cryptologic units not already mentioned.

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Question 25: Did the FA have courses in cryptanalysis for its new workers? What were they like? [Kröger]

New workers were sent by the Personnel Division to Office IV where they were given an examination to determine the extent of their linguistic knowledge. In addition the candidate was given a badly garbled text in the foreign language which he was to correct from the context. The gaps in the text were of such a nature that a fairly accurate filling in of these gaps permitted some insight into the linguistic and grammatical ability of the person tested as well as into his general knowledge and his powers of deduction. If this test was passed satisfactorily, the applicant was given a further test by the Personnel Division, as has been described elsewhere.

Newly appointed workers of the Cryptanalytic Division were generally assigned various statistical jobs and occupied with decoding and translating texts with the aid of codes which had already been solved to a great degree. Later on they were allowed to work with codes which were not so completely solved. Only when they had proven their ability in such tasks were they given more difficult assignments, e.g. solution of entirely new codes, analysis of superencipherments, etc.

Only after several years of such work were those people who stood out above the average selected to take part in a special training course. Hence the best workers of all divisions participated in such courses, which were given at intervals of about one year depending upon the needs. The number of participants was usually limited to 6 to 8.

Instruction was given five mornings a week. The afternoons were devoted to their current duties in the section or might be available for study. A course lasted some 3 to 4 months.

In content and arrangement the subject matter corresponded in the main with the treatise "Characteristics, Analysis and Security of Cryptographic Systems", although the treatise covers most points more comprehensively and thoroughly than was ordinarily the case in the course.

The course ran as follows: during the first part of the instruction the participants enciphered sample plain texts with the most varied cryptographic systems.

Then these texts were subjected to exact statistical treatment and analysis and the characteristics of the systems were developed by using these examples. After a sample text had been discussed thus in detail, the members of the course received one or more texts enciphered in the same system and were told to solve them.

After all the systems had been discussed, the students were given at the end of the course other texts enciphered in the most varied systems where they did not know which systems were involved. It was now their task to analyze the texts and after determining the system to recover the plain text. The purpose of the course was to give the participants a general survey of all cryptographic systems in a systematic arrangement and thus put them in a position to work independently on new systems and simple superencipherments within the national sections where they worked.

If in this process any special talent in the analysis of cryptographic systems was revealed, an attempt was made to withdraw these persons from the linguistic decryption and to employ them in purely analytic work.

Question 26: What were the relations between the FA, the Gestapo, the Security Service and Counterintelligence. [Kurtzbach]

A. FA and Gestapo

In general the question of the relations between the FA and the Secret State Police can be answered in one sentence: the Gestapo, or as it was later called the Main Security Agency (R.S.H.A.), tried by every means to get the FA into its power; the FA on the other hand tried to prevent this!

From the day the FA was founded the existence of an intelligence agency independent of it was a thorn in the flesh of the Gestapo. Worse than that, an agency to which the then Prussian Prime Minister GÖRING had turned over the monopoly of telephone monitoring. In spite of the constant pressure which HIMMLER and the SS exercised in this direction, GÖRING stuck to his decision until shortly before the end of the war. No doubt power politics were an important reason for his attitude, but not the sole reason: he had the definite desire to prevent the correct and objective monitoring of the FA being turned into an instrument to be used unscrupulously by the Gestapo in its struggle for power.

As long as SCHIMPFF ran the FA and DIELS the Gestapo, the reaction of the Gestapo was kept within moderate limits. Moreover at that time GÖRING was at the peak of his power while HIMMLER stood somewhat in the background. To be sure, when in 1935 SCHIMPFF set about building up a small agent group for securing political and economic information abroad, the Gestapo and the Counterintelligence, which in this matter made common front against a third rival, succeeded in having this group dissolved and in having the Forschungsamt forbidden to use agents inside and outside Germany. From that point on the Counterintelligence was regarded as competent for the employment of agents for military intelligence work and the Gestapo for the employment of agents for political work.

When, after the death of Captain SCHIMPFF, Prince Christof von HESSEN, who had previously been active in GÖRING's staff, became head of the FA and when, after the departure of DIELS, the Gestapo was expanded to the R.S.H.A., the efforts to subordinate the FA to HIMMLER became ever more intensive. The R.S.H.A. regarded the FA as something to be conquered, something to be used until it could be overrun, something which one thoroughly distrusted, and whose leadership and results were to be constantly watched for some excuse for a new attack. The FA assumed a watchful defensive attitude and endeavored to carry out its prescribed collaboration in a correct manner but not to go one step farther than it had to.

The overall relations between the two agencies were influenced to a not inconsiderable degree by a personal matter: between the Prince von HESSEN and HEYDRICH there was no bridge from the very beginning! Between them existed a "hate at first sight". Disregarding occasions when both chanced to be present at official or social affairs, they had only two meetings in 1937/1938, both of which had purely negative results. They never talked with one another again before they died. HEYDRICH was a man whose ultimate aims were as inscrutible as his methods were ruthless; probably his most pronounced characteristic was a pathological mistrust. Moreover, he was a sort of renegade: he had been a failure as a navy officer and had to leave the armed forces against his will. This accounts for his enduring hatred for everything connected with the officer corps and the social strata from which this was primarily recruited. For him the Prince was the typical representative of those circles which had excluded him - HEYDRICH, from their ranks. He would have been opposed to <u>any</u> head of the FA simply because the man directed an agency which he wished to get possession of. The fact that precisely the Prince von HESSEN was head of the FA added a personal note to his basic hostility. No doubt HEYDRICH was superior to the Prince in intelligence and knowledge of his work and from the very start he treated the Prince with mocking superiority. The

Prince of Hessia did not put up with that. He was not stupid but slow in thinking and not a good speaker. He even had an inferiority complex with respect to his subordinates within the Agency - in the first place he knew nothing about intelligence work. He was anything but pleased when GÖRING surprised him with this task. But the Prince was a gentleman, without any question; he had no personal ambition and not the slightest desire to carry the growth of the Agency beyond the stage in which SCHIMPFF had left it. He sharply rejected anything that suggested crooked ways or unscrupulous methods. He directed the FA as a mediocre colonel would his regiment: according to orders, faithful to his duty, correct, sober. HEYDRICH did not believe this; and if he had believed this, he would have considered the Prince an absolute dolt. People in the Agency were at first quite depressed when the Prince was appointed successor to their well-liked Captain SCHIMPFF: HEYDRICH would soon settle him. But the pessimists were wrong. Since the Prince by his very nature did nothing and could do nothing which would give HEYDRICH a genuine point of attack, he proved in the end an obstacle more difficult to overcome than would someone of HEYDRICH's own type. In any event the relations between the two heads were not of a character to relieve the tension between the FA and the R.S.H.A.

Down to the creation of Office VI in the R.S.H.A. the question of practical collaboration was relatively simple: the Gestapo - R.S.H.A. was entitled to request the FA to monitor telephone connections. These requests had to be justified. The requests went to GÖRING who approved them or rejected them. The latter case was rare. It happened less rarely that GÖRING approved the request, to be sure, but instructed the FA to send all the results to him first; he then decided which should be passed on to the R.S.H.A. Putting these inquiries up to GÖRING often cost time, especially when he was off on trips. This always resulted in a renewed criticism by the R.S.H.A. which claimed these delays were intolerable in urgent cases. The FA then courteously but coolly referred the matter to

GÖRING and continued to carry out the order to act only with GÖRING's approval. The results of this monitoring were delivered to the R.S.H.A. (verbatim or in summaries) several times a day or at longer intervals as called for. It soon became clear that the reasons for surveillance, which the R.S.H.A. had to attach to every request, were incomplete or even irrelevant. Complaints to the R.S.H.A. brought only evasive answers; later on one did not bother to raise these complaints. It was obvious that the R.S.H.A. was not going to let the FA see its cards, even though the work itself suffered. When the monitors did not know what was really involved, parts of conversations or entire conversations went into the waste basket if they appeared insignificant. The demand of the R.S.H.A. that <u>all</u> conversations of <u>all</u> those listed for monitoring be reported verbatim, could not be complied with. The repeated demand of the R.S.H.A. that the original notes of the monitor be turned over without further processing was rejected by the FA.

Collaboration in other cities where the FA established telephone monitoring at the request of the R.S.H.A., e.g. Munich, Köln, Hamburg, Breslau, worked out very much as it did in Berlin.

Aside from the results of telephone monitoring called for by the Gestapo this agency in the early years received only a few other VN's, namely those dealing with German internal policy. Likewise press and broadcast evaluations on the same topic.

The creation of Office VI in the R.S.H.A. brought a considerable increase in tension. It became clearer from year to year that this Agency was raising claims to a monopoly in the field of secret intelligence. The R.S.H.A. demanded for Office VI first economic, then military-economic, then foreign affairs material; in the end it demanded almost everything. At the same time the backing which the FA had formerly had from GÖRING grew less and less. GÖRING became more and more indifferent and offered less and less resistance to HIMMLER's demands. Protests by the FA he

turned down in bad temper. His decisions forced the FA to place at the disposal of Office VI more and more material which under previous arrangements was allowed to go only to the Foreign Office or the Ministry of Economics, or OKW etc. In spite of repeated assurances, Office VI gave the FA virtually no information. In 1942 the FA sent to Office VI a tabulation showing that Office VI had received over 600 VN's in one month and had supplied only two insignificant and stale bits of information. Office VI left this communication unanswered.

During the last winter of the war the R.S.H.A. attained its old goal. Telephone monitoring was taken away from the FA and subordinated to the R.S.H.A., but it was too late! The telephone monitoring had virtually ceased to function because the telephone nets in the large cities were constantly being destroyed and countless telephones were buried in rubble or burned. Before the official transfer of duties had been made, the collapse came.

B. <u>The FA and Security Service (SD)</u>

There were no direct connections between the FA and SD. The SD neither received VN's nor could it ask the FA to do monitoring. To what extent the R.S.H.A. passed on FA material to the SD is not known; it may be assumed that this was the case.

C. <u>The FA and Counterintelligence</u>. (<u>Abwehr</u>)

The relations between the FA and Counterintelligence were also clouded by a certain resentment. While the R.S.H.A. regarded the FA as run by an officer clique and as of very dubious loyalty to the Party, there prevailed in the <u>Abwehr</u> a strong suspicion that the FA was playing stool pigeon for the R.S.H.A. by monitoring the OKW and the <u>Abwehr</u>. They suspected that Captain SCHIMPFF and the officers who had accompanied him had left their positions with the armed forces to build up a civilian intelligence agency which was regarded as a rival for the previous monopoly enjoyed by the cryptanalytic units of the <u>Abwehr</u> and of OKW.

In the FA the distrust of the Abwehr was always felt to be without basis. Of course, if the R.S.H.A. had requested monitoring of the private line (monitoring official lines was taboo) of an officer of the Abwehr and if GÖRING had approved this - the reasons had to be very good indeed - then the FA would have done the job in a correct manner; the reverse also would have been true. Furthermore, officers of the OKW were never monitored until about the 20th of July 1944. Never were the reports on Abwehr "customers" revealed to the R.S.H.A., or vice versa.

Both, however were convinced to the contrary and gave no credence to the assurances of the FA. In the Agency one finally shrugged one's shoulders and gave up repeating these assurances. There were also common assignments from the Abwehr and the R.S.H.A., e.g. the Russian Embassy; in such cases both agencies received the same material.

Although the relation of the Abwehr to the FA remained over-shadowed by a one-sided distrust, yet it was essentially more positive than the relation of the R.S.H.A. to our agency. The form of collaboration corresponded precisely to that with the R.S.H.A: the Abwehr made the requests for monitoring which GÖRING approved - he did this without exception in the case of the Abwehr - and the results were passed to the Abwehr. In addition that agency received from the very start a great deal of other material, namely all reports on foreign affairs and economic policy. On the other hand the Abwehr also supplied the FA currently with a considerable body of agent reports. These came in the form of carbon copies from which all data had been cut which might have given any clue as to the identity of the confidential agent. To be sure it soon became clear that the Abwehr was either keeping its "fat" cases to itself or else did not have any in the non-military field (the FA did not get agent reports of a military character). The material turned over to the FA was not especially valuable in any event, furthermore it was almost always stale. But it was not useless. As a matter of principle it could not be used for the VN's and rarely would have been suitable for that use anyway. The

Abwehr reports were filed almost without exception in the Archive where they rounded out the picture for many individual topics, primarily in the economic field.

During the war the censorship of letters was subordinate to the Abwehr. Here the FA was treated properly and placed in the position to extract information of interest to the Agency, which again was primarily economic. It turned out beneficial to the collaboration that during the war many reserve officers were assigned to the Abwehr who dealt with the FA without resentment and distrust. Relations with the old cadre of the Abwehr were on the whole cool but perfectly proper. The FA always would have been glad if these relations had become less cool.

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Question 27: How was personnel recruited?
What security measures were taken? [Kurtzbach]

A. How was personnel recruited?

The methods of hiring differed at different periods.

1. 1933 to about 1938

The original personnel of the FA was made up of a number of officers whom the first director, Captain (Navy) SCHIMPFF, induced to give up their previous activity in the Counterintelligence (Abwehr) or with the High Command of the Armed Forces (OKW) to join him in building up this new civilian political intelligence agency. Especially in the early years this origin determined the nature of the recruiting.

The first 150 to 200 members of the FA came directly or indirectly from the circle of acquaintances of these officers; the next 200 from among the acquaintances of the foregoing. There were cryptanalysts from OKW or men with cryptologic experience in the First World War, mathematicians with linguistic ability, communications technicians - primarily from the Navy, journalists who had lost their jobs with the great mortality of newspapers after 1933 or who had no desire to work for the Party Press, young university students in the faculty of Philology or Jurisprudence or Economics, pensioned officers, and merchants with experience abroad; also interpreters for all sorts of languages. The easiest problem was securing purely administrative talent. These positions were manned for the most part by former administrative inspectors, pay masters and the like of the Navy. In the first two years it was a favorite joke to ask each new employee whether he had served in the Navy; if he said no, one asked: "then how in the world did you ever get into the FA?"

The decision as to which applicant would survive the process of elimination and actually be engaged was not influenced by consideration of Party politics in the sense that membership in the Party would improve the chances of the applicant. The only influence was negative, in that an applicant who - especially after 1933 - had appeared as an active opponent

of the N.S.D.A.P. would not be engaged.

Late in 1934 Captain SCHIMPFF outlined to the heads of Divisions and Branches the following general attitude toward the question of personnel policy and procurement:

There was no method which would always be effective for finding new members for the FA who would be both competent and personally reliable. Probably the best way would be for the leading figures and others who had proven their worth in the organization to propose people whom they knew. One must always bear in mind that certain deficiencies could be overcome by training but that weakness of character was irreparable. As far as politics were concerned, he, SCHIMPFF, was a soldier and he remained a soldier even in civilian clothing. Therefore Party politics did not concern him in the least. As long as he directed the Agency, matters of Party politics should not play any important role either in hiring or promoting. Of course there were limits: no nation, whatever its form, wanted to have notorious opponents in its intelligence agency. He himself would not take a frank criticism amiss. However he must ask for restraint because there were, as everyone knew, very influential circles which did not like him personally or his aim to keep the FA independent, objective and not tied to the apron strings of some other organization. Members of the organization must conduct themselves inside and outside the agency so as to give these circles no excuse for any interference.

Applying these principles it turned out that of the first 300 members of the organization at most 10 percent were Party members.

The possibility of securing enough recruits for the rapidly growing agency on the basis of personal recommendation by previous members was exhausted gradually although it was never given up entirely. From 1935/1936 on other courses had to be tried.

One of these was inserting advertisements in newspapers. In the great dailies ads were inserted reading somewhat as follows: "Wanted (frequently there was no indication of the source, sometimes it read "for a government office") communications technicians (or: translators).

Applications with photograph , life history and copies of testimonials are to be sent to this paper marked Dept.X. Replies were usually numerous and were sent around to the various divisions for scrutiny; those who appeared suitable were invited to appear in person. The head or heads of Divisions or Branches interested in the applicant had a 20 to 30 minute interview to get a general impression; some weight attached to reasonably good manners. If it was a question simply of translation or telephone monitoring, the applicant's claims to linguistic knowledge were tested, if a technical job was concerned, his technical knowledge was checked closely. If the factual conditions were satisfied, the feeling "he might fit in here" often tipped the scales.

The second course was for the Agency to apply to individual institutions which presumably might give the names of potential applicants, e.g. the "Oriental Seminar" of the University of Berlin, the technical universities, the "Auslandwissenschaftliche Institut", in Hamburg, schools for interpreters, and the like. These were requested to give the names of competent students of good character about to graduate who would be interested in the following line of activity (this was only suggested; e.g. air signals technology or evaluation of foreign newspapers in a government office).

From 1937 on every applicant in the evaluation section was given a sort of "thinking game test" which allowed no deductions as to the actual assignment and work of the FA but did - as it turned out later - make possible a fairly dependable estimate of the candidate's suitability for the special method of work in Office V. The applicant received several reports, some of them garbled, regarding an airplane accident from which he was to deduce in a specified brief time which plane had crashed, when and where, which occupants had been killed and which injured. These tests were so composed that one had to separate fact and surmise very precisely and draw very logical conclusions to avoid making false deductions in the brief time allotted. Some 99 percent of the applicants did not find out until they had been hired that they were entering a secret intelligence agency. Up to that time they thought - and this idea was

encouraged - that the FA was a research institution for aviation technique which combed all foreign literature on the subject. I do not recall a single case where a new employee requested immediate dismissal when informed of the purpose of the FA; there would have been no difficulties had such a request been made.

2. 1938 - 1939

Beginning about 1938 the methods of employment were tightened up. A police report on the general and primarily on the political character of each person considered for employment was required. This was connected with the increased efforts of HIMMLER and HEYDRICH to pry the FA away from "CORING - who never bothered about personnel policy and hiring methods of the EA, aside from the appointment of the director - and to incorporate it in the R.S.H.A. The primary argument used was that the percentage of reliable National Socialists in the FA was very small and that political considerations were neglected in making appointments.

In order to counter these thrusts originating in the Chancellor's Office, among the top members of the Party and elsewhere, the director at this time often urged officials and employees to enter the Party or one of its subordinate organizations and not to avoid the Party work evenings and Sundays to such a degree. The above directive was also intended to prove that everything possible was being done in connection with hiring. However, matters did not change much. Complaints which were damaging in the eyes of the N.S.D.A.P. rarely came in. As a rule they were trivial or primitive. There was considerable laughter over the following report which made the rounds of the division heads: "X always contributes when a collection is taken; otherwise there is nothing for which he can be reproached."

3. After the beginning of the war.

. A few days after the invasion of Poland the court yard, corridors and waiting rooms of the FA were crowded with hundreds of people of both sexes;

this spectacle was repeated on the following day. Mobilization was getting under way for the FA too! Even the top officials were surprised by this flood. Of course a year or more ago the divisions had been told to list their personnel requirements in case of war and to tell how many and which employees could then be released to the armed forces, but in these days nobody thought of that. Requests set forth at that time had gone to the military mobilization authorities who procured some 2000 workers from the labor bureaus. Now all these people were suddenly offered for employment. Most of them could actually be employed as good prospects. This was done at an exceedingly swift pace which left no time for any half adequate check. Whether the prescribed character statements were secured later by the personnel division can no longer be stated; probably this was only true in individual cases. In any event a large majority of the new employees were not Party members. Some of them were outspoken opponents of the political system. But they all worked correctly and loyally. Some said later they were surprised that they did not have to weigh their words more carefully in such an agency - at least in some divisions; others regarded their employment in the FA as a life insurance policy which protected them from service at the front. Further employment during the war was handled exclusively by the labor offices where it is probable that a special staff worked on FA cases.

* * *

To sum up, we may say that from 1933 to 1937 it was <u>very</u> easy to get into the FA. From 1938 to 1939 somewhat more difficult, and after the beginning of the war it was simply a matter of chance at the official labor offices. It would have been a simple matter for foreign intelligence services or for active internal resistance groups to plant confidential agents in the FA but it does not appear that this happened.

B. What security measures were taken.

The problem of secrecy and security was debated often and long in the FA. These debates always ended with the following trend of thought:

It is utterly impossible to keep a close watch on all members of the organization (in peacetime running up to about 2,000 and during the war at one time 4,000) inside and outside the agency! To do so would require an organization almost as big as the FA itself. Even an actual check that no secret material was taken away when leaving the office was practically out of the question - anyone who wished to do so would have taken no great risk. The agency was resolved to do everything humanly possible in the matter of security but there was no illusion as to the fact that this was precious little! A certain comfort could be drawn from the fact that very important German secrets could not be betrayed by the Forschungsamt! No secret plans of a political, economic, or military character and no information regarding secret weapons, etc. were either drafted or kept in the FA. Regarding any impending actions the FA was either not informed at all or only at the last moment, a fact about which vain complaints were raised. The fact that there was telephone monitoring was an open secret in foreign as well as German circles. This was proven by the so-called "TU-Kartei" (telephone monitoring card file) in which all utterances regarding the matter were recorded - and there were thousands of these documents! Of course it was highly desirable to keep secret the foreign codes solved by the FA, but the German codes were not endangered if anything became known on this score. For foreign intelligence services the FA was certainly an interesting but by no means a really prime target. Other considerations arose inevitably: valuable as the information on the Russian Secret Service, let us say, might have appeared, information regarding the actual intentions of Russian policy, the state of Russian armaments and Russian weapons would have had a much higher cash value.

Nevertheless measures to insure secrecy and security were carried out in all seriousness and constant efforts were made to improve them. At the beginning of the war, in connection with a reorganization, a separate

division, Division 1, was created for the purpose where all such questions dealing with organization, personnnel and technology were handled.

The principle security measures were:

a. The attempt to employ only dependable people in the FA, as far as possible.

b. Constant, emphatic instruction of the members of the Agency.

c. The endeavor to permit each individual to know only so much as was absolutely necessary for his immediate part of the work.

d. The obligation to receipt for every VN and the important underlying documents.

e. Careful supervision of the Agency rooms.

In particular:

Regarding a: The limited possibilities in this respect have been outlined in the section above.

Regarding b: On the day he was engaged, the new employee had to read a very comprehensive document carefully and subscribe to the same. It contained all the regulations regarding maintenance of secrecy in general and covered all conceivable individual cases.

This document contained:

Eeferences to the paragraphs covering treason and the corresponding penalties;

Explanations of the concepts "Top Secret", "Secret" and procedures entailed;

Instructions regarding conduct outside the Agency with respect to members of one's family, strangers and foreigners. Any contact with foreigners had had to be reported since time out of mind.

This comprehensive document had to be read aloud each month in each division or unit with comments by the head of the division or unit. These repeated instructions were regarded as burdensome and wearisome by reader and listeners alike. To make them a little less monotonous and also a little

more effective, individual members of the division - a different one every time - were given the task; after the reading they were supposed to pick out one single point and elucidate it as vividly and as interestingly as possible. Burdensome as this method was on the whole, it was unmistakable that it did have some effect and, to some extent, prevented people from becoming indifferent. The regulations also provided that any member of the organization laid himself liable to punishment if he failed to report any violations. This had to be pointed out every month because in Office V the comradship was so strong that no one thought of lodging a complaint against another for purely technical violations. So this regulation existed only on paper. On the other hand, if there had arisen any suspicion of actual conscious treachery, the vast majority would doubtless have decided to report the matter.

Regarding c: All cryptanalytic work, the units employed in monitoring telephones, and the great archive with the personality file were housed in separate rooms which only a few people were allowed to enter. Telephone communication with these units, however, was not limited. The evaluation section, where all messages came together, was naturally the freest in its movements within the agency. But even there section heads and experts required the express permission of the division chief to enter the areas of the cryptanalytic unit or the telephoe monitors. An F intercept operator (F - radio) on the other hand might be with the agency for 10 years without ever entering the areas of an evaluation or cryptanalytic unit or even one devoted to intercepting land line telegrams. He certainly would not enter the administrative area.

There were corresponding regulations as to who might read what products of the daily work of the FA, i.e. the yellow house copies of the VN's (see answer to question 15). Complete sets with all VN's for the day went to

Director and his deputy

The Office Chief for Evaluation and Cryptanalysis

Division Chiefs for Evaluation of Foreign Affairs, Economic Affairs and Internal Affairs.

The heads of the cryptanalytic division received a folder containing only those VN's which were based on decrypted material.

Within the Evaluation Office folders circulated which contained the VN's of the individual divisions.

This whole matter presented a problem which could never be solved completely, the more closely Evaluation cooperated with Intercept and Decipherment and with its neighboring divisions within Evaluation, the better the results must be; the greater the assurance that little bits which were perhaps very important for one unit, did not go into the wastebasket in another unit where they appeared insignificant. On the other hand, the less one unit knew about what the other was doing, the less the security risk. As long as the FA existed, efforts were made to find the best line of compromise.

Regarding d: The sigh heard day in and day out in the FA that precisely half the time on duty was spent in receipting for or getting a receipt for something somewhere or other, was exagerated of course; but if one counted it up, a full hour might be spent on this during the day. In the early years almost everything called for a receipt. When the volume of intercepts increased more and more, the requirement of a receipt had to be limited considerably. But there was still enough left. VN's and E's (decrypted material) had to be signed in and out piece by piece

from room to room, sometimes with a time stamp. In view of the many units which a decrypt touched in its progress from the cryptanalytic section through the sorting section to the head of the appropriate division, to the branch head, to the section head, to the worker and back to the division chief and from him to the archive there were all sorts of receipt procedures. And frequently several divisions, branches and sections were interested in a single document. Many hundreds of VN's, which were needed as predecessors of those being worked on wandered daily back and forth between the workers and the archives.

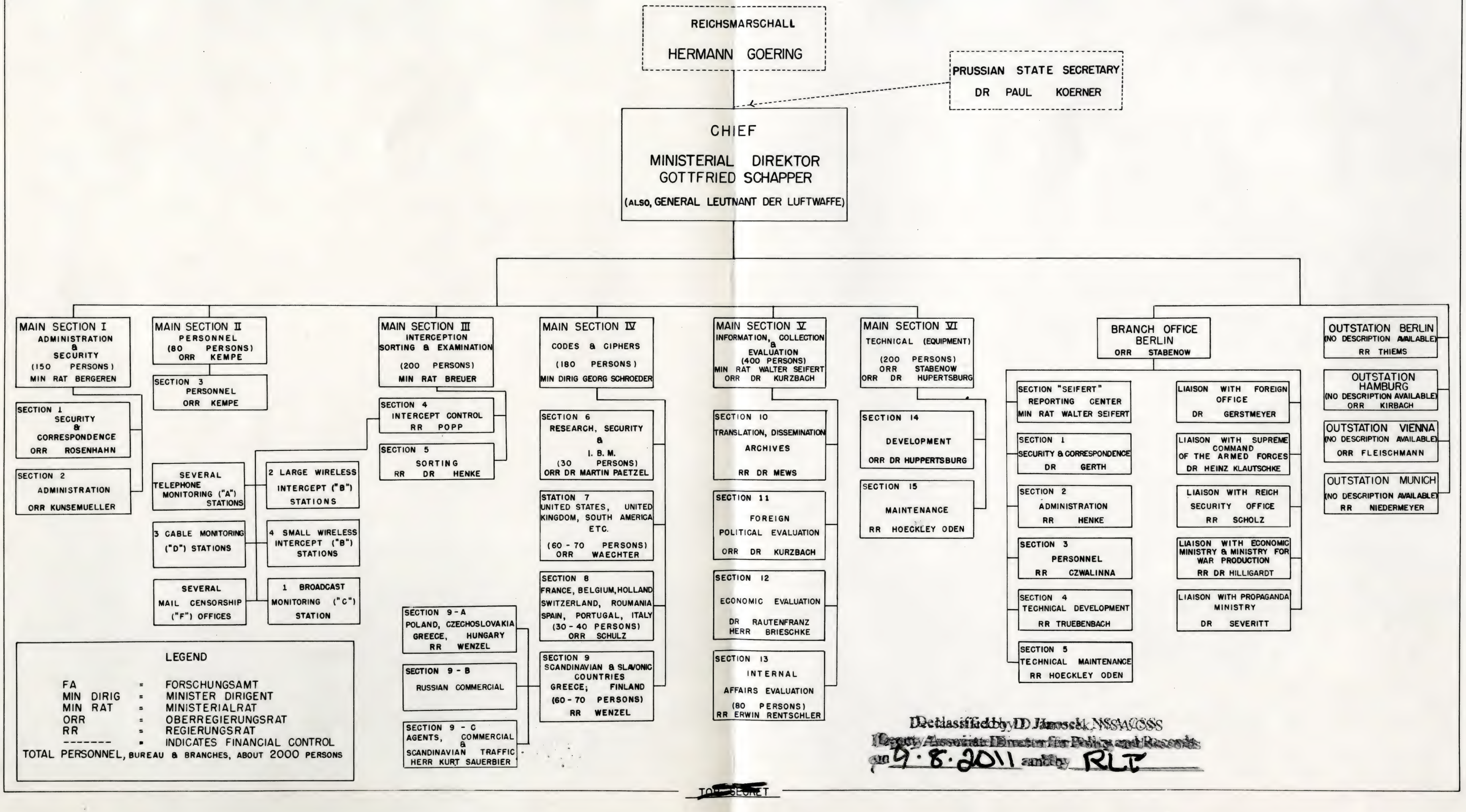
This highly unpopular, laborious procedure did have the advantage that in case of loss - generally only temporary - it could quickly be ascertained who was responsible. At irregular intervals a check of the entire stock was undertaken. The archives and the VN Depository called in on short notice all material out on loan. This entire system which required a considerable number of office workers afforded a fair guarantee that any loss of secret material would be discovered quickly. In view of the fact that in the course of years millions of documents calling for receipt were handled, the percentage of copies which definitely disappeared was small - possibly one out of 20,000.

Regarding e: The "Forschungsamt" in Berlin-Charlottenburg, Schillerstrasse, had been a large U-shaped block of apartments with the open side closed by a wide grated gate for vehicles and a narrow gate for pedestrians. In the course of time adjoining properties were purchased. The windows in the ground floor on the street side were barred The back, which opened on vacant lots, was closed off by a wall behind the rear courts insofar as the outer wall of projecting parts of the building did not form the boundary. The several sections

~~TOP SECRET~~

GOERING'S "RESEARCH" BUREAU

MARCH 1945



Declassified by D Johnson, NSA/CSS
Deputy Associate Director for Policy and Records
on 9-8-2011 and by RLT

~~TOP SECRET~~

of the rear walls were protected by selenium cells; any interruption of the current between two selenium cells by anybody - even a bird flying through was enough - set off the alarm bells. Even the walls of some of the strong rooms were also protected electrically, these were rooms where especially important material and a complete collection of all VN's were stored. The areas for cryptanalysis, telephone monitoring, and the archives were protected by steel doors (Scherentür) or gratings; they were only opened for those entitled to enter in response to a bell signal.

Visitors were announced by telephone from the gate, escorted in by a watchman and escorted out again at the end of the interview. Thus it was impossible for any non-member of the FA to wander around alone in the corridors and rooms. Visits by private persons or members of the family were not permitted. Even the wives of the chief officials never entered the FA; only in the case of little children was an exception made occasionally.

The work was in three shifts; day shift from 0800 to 1700 hours, late shift from 1300 to 2100 hours and night shift until 0800 in the morning; the assignment of hours differed, however, in the different divisions. At night patrols went through all corridors and court yards at irregular intervals. It was practically impossible for an unauthorized person to get into the FA. At the gate the guards were supposed to check brief cases and the like, but the check was not regular and was quite superficial.

C. Were there dismissals for security reasons?

No clear cut cases occurred in Office V. There were some few border line cases where security considerations played a part. Thus in the case of several typists whose work was unsatisfactory but who might have been retained if their morals had not been questionable. Very rarely male or female employees were transferred to posts where they had little or no contact with secret material.

Whether such dismissals occurred in the other offices I can no longer say. In any case I do not remember any outstanding instances which became known throughout the Agency. It is possible that such dismissals did occur before the war in the telephone monitoring or other intercept units.

D. Summary

Looking back over the history of the FA one cannot regard the overall results of the security measures as unsatisfactory. Taking into account the large number of people who dropped out in the course of the years it is probable that the Agency had some 5,000 people. Of these 5,000 only one delivered FA information to a foreign power - at least so far as became known! This was the well known SCHMIDT case. The case of Oberregierungsrat PLAAS in 1944 was quite different. PLAAS also came from the Navy. He started as head of the Section "England" in Division II (Foreign Affairs Evaluation), and later became branch head and deputy division chief. After the beginning of the war he became chief of Division 13 (Internal Affairs). He had close personal relations with Admiral CANARIS, OSTER and other leading personalities of the Abwehr. The R.S.H.A. intimated in various ways that it did not like PLAAS at all. The then Director, Prince Christof von HESSEN, who fell in Italy, never drew the proper conclusion from these hints; one factor was that the Prince disliked HEYDRICH just as much as HEYDRICH did the Prince. Among the cases which the R.S.H.A. asked to have monitored in 1944 was an officer (i.e. his telephone) who belonged to the group involved in the plot of 20 July. Whether this man was known to PLAAS personally or only indirectly through the CANARIS circle I can no longer say, in any case

PLAAS warned him directly or indirectly against being incautious at the telephone because the police was having him watched The officer fled but was arrested some time in May 1944 and revealed that it was PLAAS who tipped him off. PLAAS was arrested in Hartleib near Breslau. the then temporary quarters of the FA, and was shot in Buchenwald a few weeks later. PLAAS, whom the writer had proposed as group head and then as his deputy and finally as chief of Division 13, was a thoroughly honorable man and a good patriot. He acted only after a severe inner struggle between oath and his convictions. Thus he represents a special case which cannot be fitted in to the present topic.

Thus we may say that the percentage of - known - infractions of the obligation to preserve secrecy was very small. This is striking if we consider the political composition of the Agency. Incredible as it may sound, this was - after it had been flooded with personel - approximately as follows: <u>at most</u> five percent were fanatical National Socialists; <u>at least</u> ten percent were at heart bitter opponents of the system. The eighty-five percent lying between ranged from National Socialists with some reservations through those who are politically indifferent to those who were half opposed and in course of time became more critical. As for these latter and the absolute opponents of the system. they were made up of former officers and former trade union officials, Parlor-Bolshevists and members of the Confessional Church. Nevertheless all of them worked correctly and loyally, as became apparent from many conversations <u>after</u> the collapse. Their motives for so doing were various. For some the prime consideration was the thought: an oath is an oath! Either I ask for my dismissal, (which would have been granted without any report to the police if a frank reason had been given) or I must do my duty faithfully - after all Germany is at war. Others told themselves: in the FA I am probably safe until the very end from being sent to the front. With both groups the fear that surveillance in and outside the office would be extensive probably had some effect. Actually this was not the case: there was very little supervision within the agency and none at all on the outside! But of course they didn't trust

this peace in which they were living. From Office V alone at least 200 to 300 male and female employees resigned during the twelve years of the Agency's existence - not one of them was watched in anyway after he left. Moreover there was the fact that the work in the FA was regarded as very interesting and entirely honorable, except perhaps two or three sections in Division 13 where they monitored telephones at the behest of the police - people who had to do that sort of thing were pitied. However in the final years the only ones engaged for this work were people regarded as reliable National Socialists. Apart from that, it was possible to hope - even though generally in vain - that working up objective, unadorned intelligence material would have a beneficial influence on those agencies which determined policy.

Finally, the fact that in most divisions of the FA working conditions were pleasant was not without influence. The tone was definitely courteous there was laughter and student pranks. Political jokes, even bitter ones which "outside" might have put one in a concentration camp, were passed around with glee. Provision for social welfare was extensive; for aid in family crises a considerable fund was available. The pay, due to a relatively liberal grading and a ministerial supplement, was ten to twenty percent above that in comparable offices. The divisions were generally so amply manned that there was no question of overtaxing the individual. The only complaints were about the really limited possibilities for advancement.

To sum up, the success of the FA's security had the following reasons:

Fear of the consequences of violations;

The organizational security measures;

National loyalty, which in the case of opponents of the system was often stronger than their aversion to National Socialism;

Consideration of personal advantage.

DF 241, Part V.

Question 28: What was involved in the so-called "Security Committee?"[Kröger]

The events leading up to the founding of the Security Committee were as follows:

During the war, due particularly to certain Swedish reactions, the High Command of the Army began to suspect that the German cipher teleprinters were being read currently either by the Swedes themselves or by one of the enemy countries.

The cryptologic agency of the High Command of the Army (OKH) was then charged with subjecting the Siemens cipher teleprinters SFM-52 Types ab and c to a careful test. These studies were made by Dr. Wilhelm DÖRING who arrived at the conclusion that T 52 ab could be solved on the basis of a cipher text of 500 letters and that the T 52 c with the exisiting wiring was not much more secure. When the startling results of this investigation by Dr. DÖRING became known, the very active head of the Signal Corps at the Headquarters of the Air Force, the then Major and later Lieutenant Colonel SCHULZE, took the initiative and called a conference somewhere around October 1942 at the headquarters of the Supreme Commander of the Air Force then located near Voronitsa in the Ukraine, to which representatives of all branches of the Armed Forces were invited insofar as they used, or supplied teleprinters or were responsible for their security. Consequently this gathering was attended by more than 60 people although most of the representatives could only state where and in what number cipher teleprinters of this and that type were in use or were available.

During this meeting there was agreement that immediate measures must be taken and that only an improvement on existing machines, not a possibility of some new construction, could be taken into account at the moment. After setting forth the reasons for the solvability of cipher texts produced by these machines, it was decided that another meeting should be held in Berlin and that meanwhile the Technical Experimental Company in Köthen should check the possibilities of installing an irregular wheel movement in the two types and,

if possible, should display experimental machines in Berlin, and that the cryptanalytic specialists on their part should consider additional suggestions for improvement, and finally that the experts of Siemens, as the manufacturing firm, should be invited to the meetings.

At the next meeting in Berlin the possibility of an irregular wheel movement caused by installing a magnet was demonstrated with an experimental machine. This magnet could, under certain conditions, keep the wheel opposite it from stepping while the other wheels advanced one step.

The proposals by cryptanalysts to have these magnets controlled by the plain text had to be dropped for practical reasons because the liability of cipher teleprinters to interference when operating over long distances, especially in the East and North, was so great that if the wheel movements were influenced by the plain text one must certainly expect that the transmitting and receiving machines would soon be out of synchronization and that the result would be unpredictable difficulties in operation.

The question of re-wiring the cipher teleprinters for different radio alphabets, which had been made up along cryptanalytic principles, was also discussed and it was decided that this called for a reconstruction of the machines which was too far reaching and time consuming for it to be carried out during the war.

Consequently the only practical possibility was to influence the course of the wheels by magnets which would be controlled by lugs on several other wheels.

Although this did not abolish the regular character of the stepping of the wheels, even though a certain irregularity could be introduced, it was necessary to accept this stop-gap solution as the only possible one which could be carried out in a fairly quick and simple manner.

Moreover T 52 c was provided with a new wiring which avoided the weakness of the old wiring, which split the letters up into two separate groups, so that now plain elements could be converted into any cipher element.

Finally, at a final meeting in the Siemens factory, a program was adopted setting forth the order in which the conversions were to be made.

Subsequently representatives of the various military and civil cryptanalytic units met several times under the chairmanship of Dr. HÜTTENHAIN of OKW in order to subject all other cryptographic systems of the various agencies to a careful check on the basis of experience with the security of the cipher teleprinters. But since - as it came out in the course of time - most of the agencies refused for this or that reason to reveal the systems they had developed and to have them tested by the committee, the work of the committee was in reality limited to hearing some reports about other systems used by the Army after which it did not meet again.

DF 241, Part V.

CRITICAL EVALUATION [Kurtzbach]

F O R E W O R D

In the following an attempt is made six years after the dissolution of the "Forschungsamt" to give a critical evaluation of its actual intelligence value measured against its task of providing the then German government and numerous central agencies of a political, economic and military nature with all secret communications which could be intercepted by technical means. This evaluation is written primarily from the standpoint of the evaluation service.

I. Basic Weakness of the German Intelligence Service from 1933 to 1935.

The basic weakness of the German intelligence service lay in the fact that there were many intelligence services but no one which was centrally organized and centrally directed to which all secret (and open) sources and means of intelligence were available! Why no centralization of the intelligence work resulted under a system of government, which otherwise centralized everything possible and impossible, probably is still a mystery to all those who were then engaged in the work. In democracies it may prove difficult to combine intelligence agencies which have grown up organically and to overcome their desire for independence and their jealousies in questions of competence. Under the dictatorship, which made an absolutely fresh start in this field - apart from the old "Abwehr" which was primarily military - it would only have required a word from HITLER to prevent any splitting up from the very start or to have corrected the condition overnight.

HITLER never spoke this word although it was suggested to him often enough. The reasons can only be surmised:

In the first place he never understood the value of a really good, properly functioning, secret service. Regarding the VN's of the FA, which were often dry but were absolutely reliable and objective, he is said to have remarked shortly before the war started: "they disturbed his intuition". Apparently he liked sensational secret reports and show pieces, he probably showed CHAMBERLAIN in Godesberg the FA reproduction of the telephone conversations of BENES in Prague with Masaryk in London in which they criticized the English Government very sharply. By so doing, he did something for which any member of the FA would have been hanged. But the content of the messages must have fitted in with his thinking in order to meet his approval. Moreover he never visited the FA or any of the other signal intelligence agencies.

The second reason may have been that he desired competition even in this field.

Thus it was possible that in a centralized dictatorship such as the "Dritte Reich" was at least the following agencies were doing intelligence work:

.Counterintelligence (Abwehr) - primarily military, at least officially, because CANARIS certainly picked up political information wherever he could get it; agents.

Forschungsamt - political, economic and as a by-product military; only by technical means of interception.

Main Security Office (R.S.H.A.) Office VI - originally only internal affairs, state police with agents inside the country, later abroad, then making increased use of technical means: political, economic and military.

Security Service (SD) - Type and extent of foreign operations not known.

"Auslandsorganisation" - Reconnaissance abroad through the Party Organization.

German Post Office Department - Interception of messages by technical equipment in collaboration with Office VI.

Cryptanalysis: High Command of the Armed Forces (OKW) and the several branches of the Armed Forces; Foreign Office; FA: at the last pretty surely Office VI as well.

This enumeration is by no means complete. RIBBENTROP and some active ambassadors like von PAPEN had their special sources of intelligence. The author recalls that once during the war it was calculated at the FA that there were almost twenty agencies dealing with intelligence work.

II. Basic Weaknesses of the FA

1. The main weakness lay in the fact that after the unsuccessful attempt under Captain SCHIMPFF to set up an agent apparatus in 1935/1936 (see Question 26), only technical means of interception were permitted. The possibilities of purely technical intercepts are great, as is well known, but they do have the serious disadvantage that their use is dependent on geographic and meteorological conditions; consequently their effect corresponds more to that of scattered artillery fire than to concentrated fire at a carefully plotted target. It is dependent in large measure upon chance and good fortune.

If the FA was denied the possibility of trying to fill in significant gaps in its situation reports by using agents of its own and if it could not attack those sectors which can only be reconnoitered by human means, yet theoretically it should have been possible to fill in these gaps by using the potential of the Abwehr and the R.S.H.A. In practice this was not the case. Appropriate agreements had been made, to be sure, in 1935/1936 and were repeated later on but they were never observed seriously. As has been shown in Question 26, the Abwehr did supply the FA with a substantial amount of material but most of it, say ninety percent, was economic material of minor importance, mostly months old. No one in the FA doubted for a moment that the Abwehr was keeping its "good" material to itself. However, the R.S.H.A. simply gave nothing at all! An attempt was made to ask for the employment of agents by both agencies, but this led to no results in either case.

What could be and was obtained from the R.S.H.A. consisted of data regarding names, addresses, telephone numbers etc. of people living in Germany, in other words of data that could have been gotten from any Registration Office of the Police, but which could not be requested directly by the Forschungsamt of the German Air Ministry without endangering its secrecy.

2. The second weakness lay in the fact that the FA was not a political power. Behind the R.S.H.A. stood HIMMLER and the SS. Behind the Abwehr stood OKW and the Armed Forces. Behind the FA was only GORING. From 1933 to 1938 that meant a great deal but from then on it meant less and less. But all the while GORING's erratic conduct left it undertain whether and to what extent he would back the FA in individual cases.

These facts have to be considered if we are to attempt to estimate the value of the FA. What has been said under 2 above meant that the FA had no information whatsoever regarding German intentions, impending action etc. or was informed very late and inadequately.

On the other hand the FA had quite ample financial resources. It began in 1933/1934 with a budget of approximately one million RM which was increased from year to year and in the end amounted to some 10 to 12 millions.

III. Evaluation of the Sources

1. Telephone

From the standpoint of the evaluation units and thus indirectly from the standpoint of the recipients of the VM's the results of telephone monitoring held a special place. For one thing the FA had a monopoly here which in many respects outweighed the lack of an agent set-up and consequently of possibilities open to the Abwehr and R.S.H.A. The intelligence value of telephone monitoring, noted in the FA by the source designation Z, varied very much with the subject and the time.

As far as the portion dealing with internal politics, police and counter-espionage was concerned, the leeway was much less than has been assumed by the German public and doubtless by interested circles abroad. Telephone monitoring in the FA began with about 100 possible connections (drops); it ended up in Berlin - which of course was the focal point - with about one thousand. For these 100, 300, 700 and finally 1000 drops there was a constant struggle between the evaluation sections for foreign affairs, economic affairs and Gestapo matters such as would be found in the editorial rooms of a newspaper for space. The maximum ever available for Division 13 may have been two-fifths of the number of drops assigned to the agency at the time, i.e. in Berlin from 1933 to 1935 some 40 to 120 telephone connections could be monitored simultaneously for Gestapo or counterintelligence purposes; from 1935 to 1937 some 200 to 300 connections, and from 1938 on some 400 connections. A not inconsiderable part was devoted to routine monitoring of foreign journalists in Berlin. I do not recall the number of telephone connections in Berlin but it surely amounted to many tens of thousands so that the telephone monitoring covered only a tiny fraction of them. Of the remaining drops some 120 were used for monitoring foreign diplomatic missions in Berlin and about 100 for lines running out of Germany and through connnections. During the war these later were monitored one hundred percent. The only way out of the chronic lack of drops was to keep perhaps ten percent free and use them for swiftly changing sampling.

Since the writer was engaged only in the Division for Foreign Affairs from the very start and merely assisted in directing the Division for Economic Affairs for about a year during the war, he can give only general statements regarding the value of the telephone monitoring done for the Abwehr and the R.S.H.A. From the point of view of evaluation this called for no special skill and consisted in reality of copying some verbatim and condensing the rest. Their value to the Abwehr and the R.S.H.A. cannot have been slight because they contained material which these two agencies could not obtain by their own instrumentalities and which was absolutely

authentic, objective and reliable to the highest degree. I do not recall any particular sensational results, they may have occurred but it is doubtful whether the R.S.H.A., at least, would have reported this to the FA.

For the evaluation of foreign affairs the telephone intercepts doubtless had very great value down to the beginning of the war. The FA's experience was doubtless the same as that abroad: it is astonishing what an accurate picture can be obtained in many cases of people with whom one has never become personally acquainted if copies of their telephone conversations are laid on one's desk day in and day out for months or even years! Division II did, in any event, have a very good picture of all the important foreign diplomats in Berlin covering their personality, their peculiarities, their method of work, their relations with their superiors and inferiors, with their families, friends, acquaintances and colleagues. This was confirmed again and again. Moreover in general their political views could be fairly accurately assessed (particularly when the decrypts supplemented the telephone monitoring). On the other hand the results with respect to their current official affairs differed greatly according to nationality.

(See Question 15, Part III, pages 50 and 51).

For the economic evaluation the results of telephone monitoring played a lesser role, apart from commercial negotiations with foreign countries which took place on German soil. In these later cases the results, often supplemented from other sources, were of great financial importance. In one of the years before the war Germany saved eighty millions through the efforts of the Fa, a sum ten times the FA budget.

2. Cryptanalysis

Decrypted radio and wire messages naturally were of most use to those evaluating foreign affairs. Of course one greatly regretted the fact that the systems of the great powers, at least of the more important ones, were never solved. Nevertheless what was learned from French, Italian, Belgian and above all from Turkish diplomatic traffic afforded a certain substitute, which - combined with other sources - sufficed for an estimate of the

momentary situation which was essentially correct. This is where one especially regretted the absence of valuable and reliable agent reports which might have filled in many a gap.

For the economic units the decrypts were of moderate value, Division 13 received practically none.

3. Plain text radiograms

These sources afforded valuable material on foreign affairs only in the press reports. On the other handy taken in connection with the intercepts of Russian internal radio traffic, they supplied the chief material for the economic sections which found here much of intelligence value. For Division 13 they were of very little value.

4. Broadcasts

For Divisions 11 and 13 [12?] broadcasts signified only an auxiliary source, apart from the observation of foreign propaganda in Division 11. For Division 13 and its observation of the propaganda directed against Germany this "R" material was naturally rather important.

5. Press and periodicals

Special attention was paid to the press in all three divisions. The press and numerous periodicals afforded very valuable supplementary material for 11 and 12.

IV. Evaluation of the VN's

1. Foreign affairs

During the first years the results of the FA in all fields, except telephone monitoring for the Police, were necessarily very small. In foreign affairs and economics they were intentionally utilized to train new helpers, mostly absolute novices, and to pump the archive and card file full of material. Then a little accidental success brought the new agency somewhat more into the lime light; this was when it was possible to report the results of the Saar Plebescite before it was publicly announced. As I recall it, the League of Nations Commissioner reported the result from Saarbrücken to Geneva in an Indonesian dialect and it just happened that an operator was available who understood this dialect.

It was not until 1937 or thereabouts that the VN's were taken as a serious source of information by the Foreign Office and others. In all phases of the tense situations from 1937 to 1939 the work of Division 11 probably represented the most important material in the field of foreign affairs available to the German Government - at least it might have been. As stated under Question 15, the FA was forbidden to express its deductions from the material or to offer recommendations or advice. The efforts of England and France down to the Munich talks to avoid a new World War by making concessions to HITLER could be seen here as could the British determination to accept all consequences of its guarantees to Poland. Under Question 15 mention is made of the fact that Division 11 currently, and without being requested to by the Foreign Office, evaluated and passed on all messages indicating a possibility or probability that the USA would enter the war early. At the beginning of the war - the impending invasion of Poland was announced to the FA only a few hours before it began so that there was hardly time to organize for an emergency - the traffic receipts for Division 11 dropped off at first quantitatively and qualitatively; then there was a gradual improvement, but the pre-war state was never again attained. The Division then paid increased attention to British propaganda which must be regarded as rather clumsy and innefective during

the first two years of the war but improved during the third year and from then on was excellent. Since the cryptanalytic units were able to solve the secret propaganda instructions to the British secret diplomatic missions in allied and neutral countries during the first two or three years, it was easy for the Germans to counteract them. Later these instructions could no longer be read and it was necessary to reconstruct them from the propaganda itself, with which task we had adequate success. As a particular sensation one regarded the interception of a conversation between the Finnish ambassador in Paris in the spring of 1940 and his foreign minister in Helsinki in which the ambassador reported on the official announcement of Great Britain and France, which had just been made, to the effect that troops would land in the near future in Norway and would establish a connection with Finland.

The intelligence picture of Division 11 for the USSR was decidedly inadequate from first to last. The Soviet systems were not solved; the Russian diplomats did not use the telephone for official communications of even slight intelligence value either in Berlin or other places within reach. If there were any serious agent reports in Germany on Russian Foreign and military policy, the FA never received them; however, it was doubtful if any were available, unless perhaps some dealing with military matters and equipment. Thus the FA and Division 11 had to rely on indirect information, e.g. reports of the Turkish Ambassador in Moscow who apparently was less well informed than his colleagues in Berlin, Paris, London, Washington, etc. The picture of the situation in Japan was not much better and that of the USA left much to be desired. It was somewhat better in respect to London. In the case of other European countries, the small states in the East and in the Balkans, the picture was adequate to good, it was poorer in regard to Scandanivanian countries. South America was not of great interest.

The value of the FA evaluation in the field of foreign affairs declined steadily in the second half of the war. According to the documents available to Division 11 no doubt could exist that the alliance of the Western Powers with Moscow would last until the end of the War -

questions on this point came in rather often from the Foreign Office and other agencies - but details regarding the relations and type of collaboration between East and West could rarely be obtained. The meetings of ROOSEVELT and CHURCHILL with STALIN during the war became known to the FA only from the official Allied communiques. Only the secret journey of MOLOTOV to London could be announced about a week in advance; as an official in the Foreign Office told Division 11 confidentially, RIBBENTROP paid no attention to it or to the suggestion to use it for propaganda purposes in advance of the conversations. Although the documents made it not unlikely that the Italian Monarch and BADOGLIO would desert, the arrest of MUSSOLINI came as a surprise to the FA. The defection of other allies could not be detected in advance with the technical instrumentalities of the FA.

,To sum up, we may say that the exploration of foreign affairs by the FA produced worth-while results down to the beginning of the war, except for the countries above noted, and was fully confirmed by events; during the first half of the war the results were fair to unsatisfactory and in that second half of the war were predominately unsatisfactory.

2. Economics.

The results of the explorations of Division 12 in the field of economics, economic and commercial policy, and the armament industry must be characterized as very good.

The fact that the cooperation of the FA in connection with commercial negotiations on German soil led to very considerable savings of exchange etc., both for the government and private industry, has already been mentioned. Moreover German exports were assisted by very useful and profitable hints provided by the FA. The control of the war economy was likewise facilitated materially.

In contrast to the subscribers of Division 11, the Ministry of Economics, Ministry of Transportation, Offices of the Four Year Plan, and Offices of the Armed Forces dealing with the Armament Industry,

all dealt with the FA without prejudice and soon with outspoken confidence; as a rule they on their part kept Division 12 informed on major and minor matters.

In point of time the effectiveness of Division 12 began later than that of 11 but it lasted longer and reached its climax only after the war began. One factor was that the picture of the economic situation in the USSR and especially the supply of raw materials and war equipment, was far better in Division 12 than was the picture in the field of foreign policy. Of course Berlin was not completely informed regarding production capacities and bottle necks of the Russian war economy, but still it had very good information. The picture of American lend-lease deliveries was much poorer.

DF 241, Part V.

SUMMARY

The leading officials of the evaluation units of the FA had the feeling regarding their own results and the results of all the German intelligence services that a little was good, somewhat more was not so bad, but that most of the work was poor and needlessly so. They saw the principal reason for this in the fact that there was no unified German intelligence service which combined all personnel, technical and financial resources.

They were convinced that the Russian, American and British service was better, both in respect to cryptanalysis and in the use of agents; they regarded the French as poorer.

As far as the FA itself is concerned, they regretted the limitations imposed by the administration which, after Captain SCHIMPFF, was less concerned with intelligence than with an organizational bureaucracy. Within the bounds of reasonable possibility, they consider the card file and archives as fairly perfect, the results of the work of Division 12 were considered good, those of Division 11 were thought to vary between good and bad. The results of Division 13 could hot be properly compared with the others since this Division was concerned primarily with supplying raw material for the Abwehr and the R.S.H.A.

And finally they were of the opinion that among the evaluators, cryptanalysts (in particular the gifted son of the composer von RESNICEK, who died prematurely) and technicians there were not a few specialists of outstanding ability who might have produced much more favorable intelligence results under better organizational conditions.

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THE FORSCHUNGSAMT

1. Attached are three charts showing the organization of a) the Forschungsamt, b) Office IV-Cryptanalysis and c) Office V-Evaluation as given by Messrs. Kröger, Hüppertsberg and Kurtzbach. For comparison the chart in Vol.7 of the "TICOM REPORT" (1946) is reproduced.

2. The chief difference is in the subordination of Division 2. Whether this is due to faulty memory on the part of the authors of DF 241 or to a change made in 1945 after SCHAPPER became Director (the captured document on which this chart was based is dated 9 March 1945) is not known to the editor. Any such late change would not have made a deep impression on the authors of DF 241 and in any case they were trying to give the picture as it existed during the war, in particular as a result of the reorganization of 1939.

3. The change in terminology is due to an attempt to make the terms of the present charts conform to the AFSA organization: Agency - Office - Division - Branch - Section.

Edited: R.W.P.

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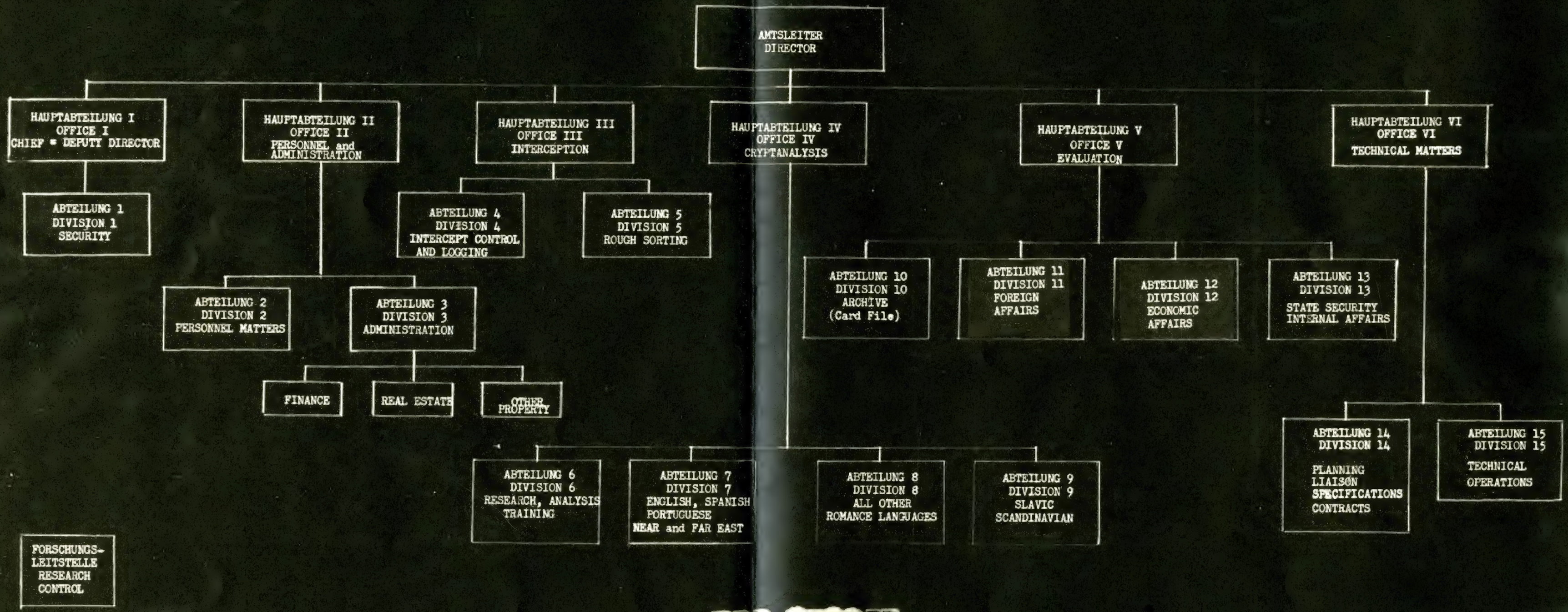

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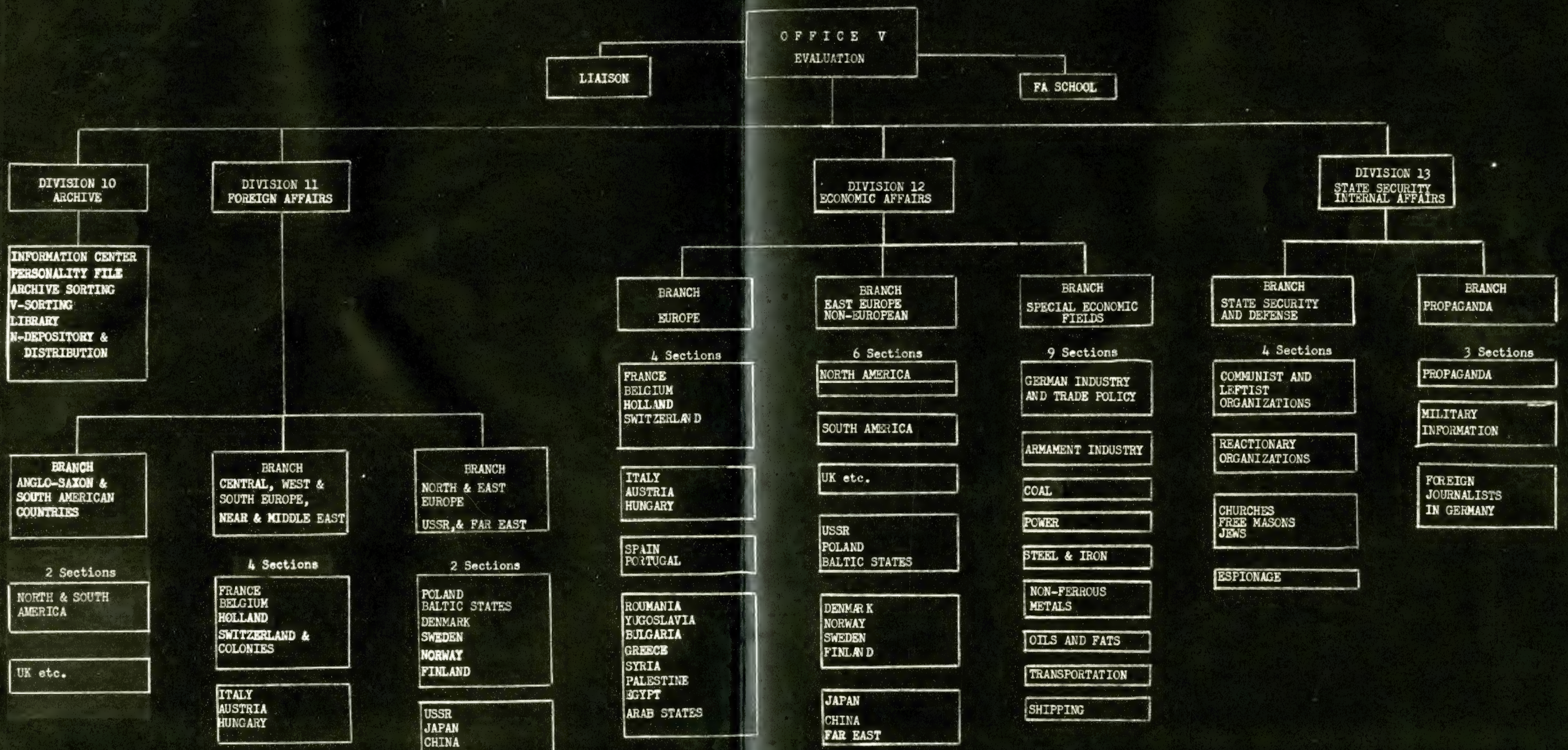

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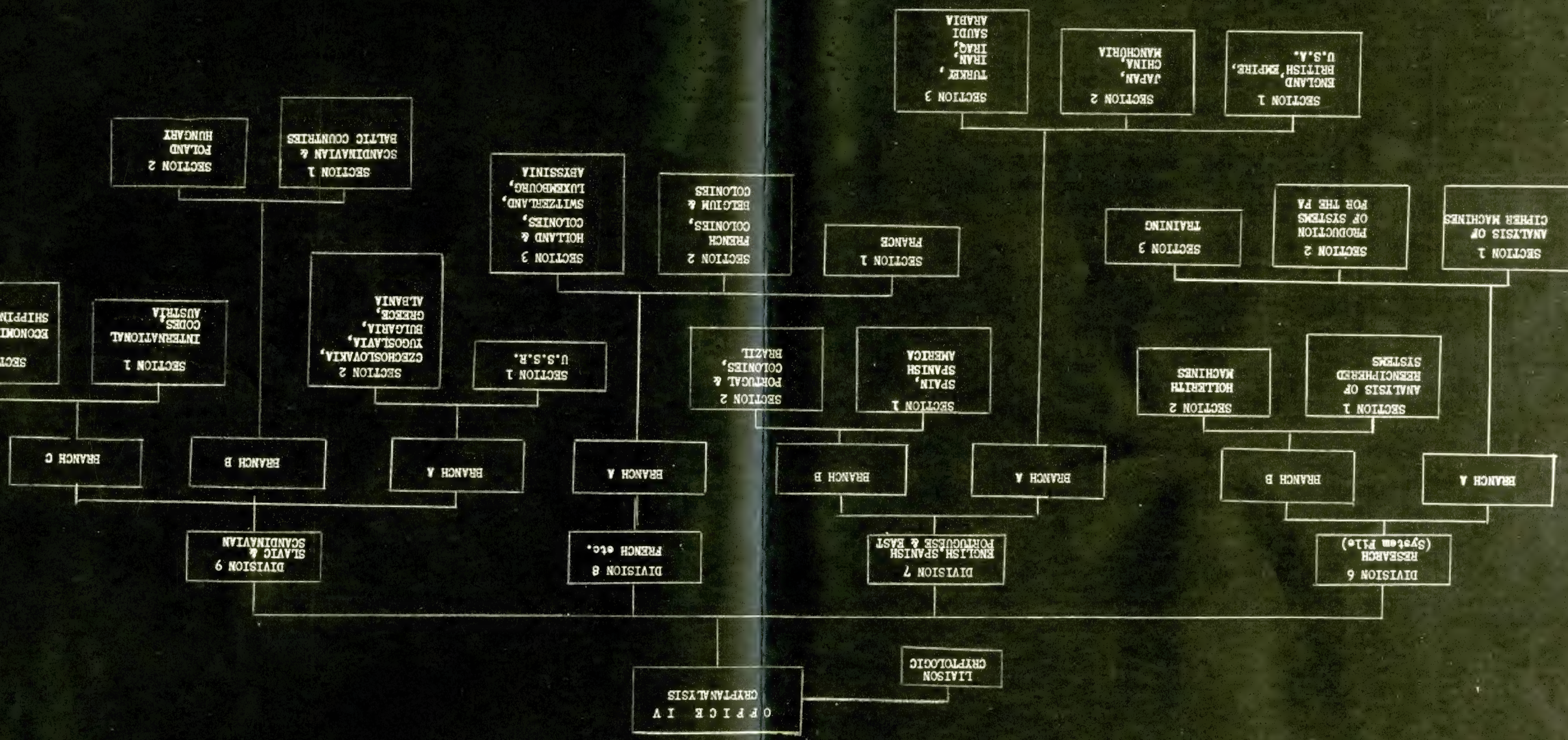

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The Forschungsamt

1. Attached is an index to Parts I - V (DF-241) of the homework by Messrs. Krüger, Huppertsberg and Kurtzbach on the organization and work of the Forschungsamt.

2. Dr. Krüger's paper on Cryptology (DF-240) purports to cover the subject matter of the training courses of the Forschungsamt. It is not covered by this index. A Supplement, containing T/O charts is proposed.

Index by MCM

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